NP540U3C

Lotus-13R-TSP

SERVICE MANUAL

540U3C

Contents

1. Precaution
2. Introduction
3. Desassembly and Reassembly
4. Trouble shooting
5. System Wire Diagram

Refer to the service manual in the GSPN (see the rear cover) for more information.

Contents

1. Precaution ..... 1 − 1
1.1. General After-Sales Service Precautions ..... 1 − 1
1.2. Safety Precautions ..... 1 − 2
1.3. Ground ..... 1 − 3
1.4. Static Electricity Precautions ..... 1 − 4
2. Introduction ..... 2 − 1
2.1. Product Features ..... 2 − 1
2.2. Specification ..... 2 − 2
2.3. Comparing product specifications ..... 2 − 8
2.4. Function of Product ..... 2 − 9
2.5. New Technology / ability ..... 2 − 13
2.6. Hardware ..... 2 − 31
2.7. Software ..... 2 − 38
2.8. System Setup (Bios Setup) ..... 2 − 41
2.9. HW & Option Materials ..... 2 − 48
3. Desassembly and Reassembly ..... 3 − 1
3.1. MainSystem ..... 3 − 1
3.2. LCD ..... 3 − 4
4. Trouble shooting ..... 4 − 1
4.1. General spec ..... 4 − 1
4.2. Debugging Flow Chart ..... 4 − 2
4.3. Hardware Troubleshooting ..... 4 − 5
4.3.1. LCD ..... 4 − 5
4.3.2. Main System ..... 4 − 6
4.4. Diagnosis application ..... 4 − 11
4.5. Bios & Micom Update ..... 4 − 13
4.6. RTC Reset ..... 4 − 14
4.7. Battery Use time ..... 4 − 15
4.8. CPU FAN Control ..... 4 − 16
4.9. System Diagnosis ..... 4 − 18
4.10. Hardware Upgrade ..... 4 − 19
5. System Wire Diagram ..... 5 − 1
5.1. System Layout ..... 5 − 1
5.2. Board Component ..... 5 − 4

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1. Precaution

1.1. General After-Sales Service Precautions

1) Do not let customers repair the product themselves..

   › There is a danger of injury and the product life time may be shortened.

2) Make sure to disconnect the power cord from the wall outlet before repairing the product (especially for after-sales service of electric parts).

   › There is a danger of electric shock.

3) Do not let customers plug several electric home appliances into a single wall outlet at the same time.

   › There is a danger of fire due to overheating.

4) Check if the power plug or wall outlet are damaged in any way.

   › If a defect is found, repair or replace it immediately.
   (There is a danger of electric shock or fire)

5) Make sure that it is properly grounded.
   (Check the ground of the wall outlet)

   › Electricity leakage may cause electric shock.

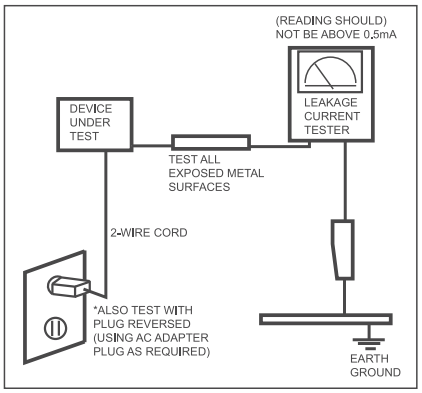

Figure 1.1 Leakage Current Test Circuit

6) Do not spray water on to the product to clean it.

   › There is a danger of electric shock or fire and it may shorten the lifetime of the product..

7) Check the assembly status of the product after the after-sales service..

   › The assembly status of the product must be the same as before the after-sales service.

8) Unplug the power cord holding the power plug (and not the cord).

   › If the cord is disconnected, it may cause electric shock or fire.

9) Repair the product using only authorized parts

10) Keep the product away from heating devices such as heaters.

   › Exposure to heaters may cause deformation of the product or fire.

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1.2. Safety Precautions

1) **EMI**

This device has been registered regarding EMI for residential use. It can be used in all areas.

2) **Circuit Test (Logic Test) Precautions**

The LSI and MSI used in this product are semiconductor integrated circuits based on MOS-FET or CMOS. Since these types of devices are highly susceptible to static electricity or current leakage, an isolation break may be caused. Therefore read and follow the instructions below.

a) When handling an LSI or MSI, make sure your body is grounded through a few mega-ohms of resistance. In addition, wear gloves and a jacket made of cotton and not of synthetic fibers that easily generate static electricity.

b) When repairing the product, place a conductive material (e.g. aluminum foil) grounded to the earth on the worktable.

c) You must use a soldering iron without a leakage current.

d) Do not touch the pin of an IC and carefully insert the IC into the black plastic package.

e) When inserting an IC into a PCB, be careful with the direction of the IC. When installing an IC in the wrong direction, it might become damaged.

f) When carrying an IC, package the IC with conducting material such as aluminum foil or conducting sponge so as to keep the voltage level of each of the terminals the same.

g) Since the storage temperature of an IC is between -20 ~ +70 degrees, keep it at room temperature, if possible.

h) Since the storage temperature of an IC is between -20 ~ +70 degrees, keep it at room temperature, if possible.

i) When soldering an IC, solder it in as short a time as possible so that unnecessary heat is not applied to the device.

j) Avoid leaving excessive amounts of flux within a custom IC or between the pins when soldering a custom IC.

k) Take care to not damage the board when installing or separating an Option Board.

l) Take care to not break the printed circuit pattern on the PCB when separate an IC.

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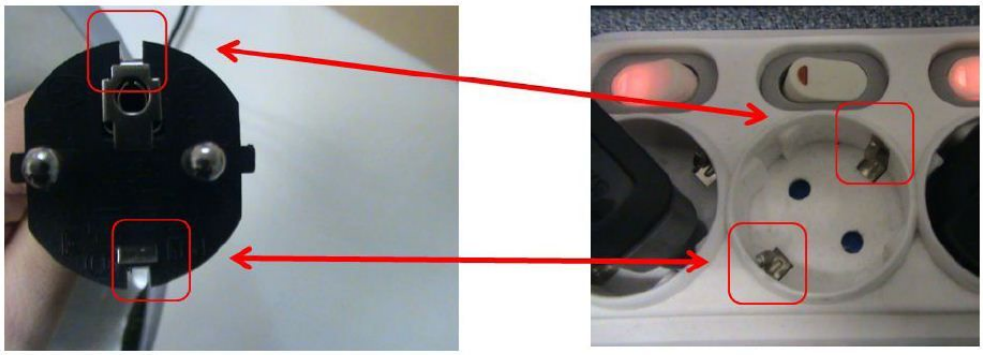
1.3. Ground

The product must be grounded to protect it from static electricity and other dangers. When using a multitap, please use a multi tap with a ground terminal only.

If you use a 220V wall outlet with a ground terminal, you do not need to ground it additionally. Avoid using wall outlets if they are not grounded even if they have a ground terminal.

To ground the product, connect the ground to an exclusive ground terminal or metal water pipe. Connect the ground cable to the ground terminal at the rear of the main body. To ground the product, connect the ground terminal of the product to a metal water pipe, wall outlet or exclusive ground terminal with an electric wire equal to or thicker than #18.

Never ground the product to a PVC water pipe, phone line, TV, radio antenna, aluminum window or gas pipe, because this does not actually ground the product and may be dangerous.



Ground portion of the outlet

Ground portion of the multi-tap

The red box of each image is earth with overlap when inserting a plug or multiple-tab into the socket.
Please check that it should be put the outlet completely.

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1.4. Static Electricity Precautions

Many parts of the system are susceptible to static electricity. Using an electrostatic discharge (ESD) device is very important for the safety of the user and the user's surroundings. Using an ESD device increases the probability of a successful repair and lowers the expenses for damaged parts.

To prevent static electricity, follow the instructions below.

1) Perform the repair in a location without static electricity.
2) Touch your hands to a metal water pipe or some metal object connected to the ground to discharge any static Electricity from your body before handling the parts.
3) Touch only the edges of the board, if possible.
4) Do not touch any parts unless absolutely necessary
5) Disassemble the parts on the anti-static-electricity pad.
6) When a board is not installed in the system, package the board with an anti-static-electricity packaging.

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2. Introduction

2.1. Product Features

Target Segment : Mobile Stylists

■ "I am looking for sleek and slim PC to complete my lifestyle."

20~30's office worker, Trendy and mobile product pursuer

- *Thin and Light* : I love to go out and want to *bring my PC wherever I go.*
- *Optimized Touch Input* : Prefer *easy-to-use interface* and want to have *emotional interaction* with my PC
- *Powered to perform* : I seek for *better productivity* to help my work
- *Long Battery Life* : Often go to business trip or spend time on-the-road, so I need to use *all day long.*

Mobility You Want, Performance You Need

Scalability

Get more to save enough

- **Save as much as you need, Enjoy true multitasking & multimedia**
  - High Capacity HDD (Max 500GB+24GB iSSD)
  - Max. 8GB Memory (Scalable)
- **Convenient to use**
  - Full HDMI port, VGA Adapter
  - Support RJ45, USB 3.0

Uncompromising Performance

Save time and Enjoy more

- **Optimized input for touch-centric Win8**
  - Touch screen for Win8 interface
- **Save your time and energy**
  - Samsung Fast boot w/ExpressCache
  - Fast Start (2sec wake-up)
- **Vivid &Clear image everywhere**
  - 300nit Superbright w/Image Enhancer
  - Anti-reflective display

Optimal Mobility

Carry easily, use longer

- **Take with you anytime anywhere**
  - Z-height : 16.9~19.6mm, Weight : 1.68kg (w/ mSATA SSD), 1.71kg (w/HDD)
  - Aluminum + Glass Fiber Chassis
- **Long time use without worry of recharging**
  - 52Wh
  - 1,500 cycle

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2.2. Specification

Processor* and Motherboard	
CPU	Intel® IvyBridge Processor i3 3217U 1.50Hz, 3 MB Intel® IvyBridge Processor i5 3317U 1.70Hz, 3 MB (Up to 2.6 GHz) Intel® IvyBridge Processor i7 3517U 1.9GHz, 4 MB (Up to 3 GHz) - Max Spec
Cache	L3:3~4MB
Chipset	Intel HM76
BIOS	64 Mbit SPI flash, upgradeable
Thermal Design (TDP)	MAX.17W
Memory*	
Maximum Capacity	**MAX. 12GB** (on BD 4GB + 8GB x1)
Type (MHz)	DDR3 (1333MHz/1600MHz)
Modules	**4GB**((on BD 4GB) **6GB**(on BD 4GB + 2GB x 1) **8GB**(on BD 4GB + 4GB x 1, Later introduction schedule) SODIMM
Sockets	1-slot SODIMM & On-board (up to 4GB) '1 Slot Per Max. 8GB Support'
Upgradeable by users	Yes
	※ PC3-10600(1333Mhz), PC3-12800(1600Mhz) confirmed the compatibility test.
Display and Graphics*	
LCD	13.3" With TSP(Touch Screen Panel : electrostatic, tempered glass) * Not support 3 Display
Ratio	16:9
Panel	TN
Surface Type	Non Glare
Back Light	LED
Interface	LED
Vendor	Samsung
Resolution (Number of Pixel)	HD (1366x768) Win7 Support /Win8 Support (1366 X 768,1360 X768, 1280 X 768,1280 X720,1280 x 600, 1024 X 768, 800 X 600)
Viewable Area	293.42(H) X 164.97(V)
Viewing angle	Hor. +45/-45, Ver. +15/-30(typ)
Pixel Pitch	0.2148(H) x 0.2148(V)
Contrast Ratio	Min.300, Typ.400
Brightness	typ.300 (cd/m2)
Colors	16.2M
Response time	**Typ.16ms**, Max. 25ms (Rising + Falling = LCD response speed)
Graphics Controller 1	1.Intel HD Graphics 4000 (Internal)

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Max. resolution for VGA	Max resolution of 2560x 1600 at 60Hz at 85Hz refresh rate (ext.) Supported resolution (640x480,800x600, 1024x768, 1152x864, 1280x800,1280x960,1280x1024, 1400x1050,1440x900,1600x1024,1600x1200, 1680x1050, 1920x1200, 1920x1440, 2560x1600) [Ext.monitor resolutions supported by EDID information]
Max. resolution for HDMI	Support v1.4a compliant / a resolution of 1920x1200 pixels with 32-bit color at 60 Hz
Max. Resolution for LFP LVDS	dual link resolution of 2560 X 2048 per link / a maximum theoretical pixel rate of 224 MP/s (640x480,800x600, 1024x768, 1152x864, 1280x800,1280x960, 1280x1024, 1400x1050, 1440x900,1600x1024,1600x1200, 1680x1050, 2560x2048) [Ext.monitor resolutions supported by EDID information]
Multimedia	
Sound	High Definition Audio
Controller	HD Audio Codec, ALC269Q-VC2-GR
Conversion	Built-in high performance 24-bit ADC & 24-bit DAC
Internal Interfaces	Embedded stereo speakers, Internal Mono MIC
Speaker Power Rating	2 Speakers x 2 Watt with enclosure each
External Interfaces	Headphone/Mic Combo, Not Support S/PDIF
Controls	Keyboard volume control
Camera	
Image sensor	1.3 Mega CMOS Color Image Sensor
Still Image Capture Resolution	1280*1024(Max.), 1280*720, 800*600, 640*480, 352*288, 320*240
Video Capture Resolution	1280*1024(Max.), 1280*720, 800*600, 640*480, 352*288, 320*240
Frame Rate	30fps @ HD, 24MHz MCLK
Output Video Format	SXGA, HD, SVGA, VGA, CI and QVGA
Interface	USB 2.0
UVC Support	Supported
Storage*	
Hard Disk Drive	**7mmH 2.5" HDD, Removable (with Express cache 24GB=iSSD SATA3)** * 9.5mmH 2.5" HDD installation impossibility
Vendor	HITACHI (BA59-03210A)
Supports	SATA host controller support 48bit LBA
Average Access Time	12m sec.
Interface	SATA2 (3.0Gbps) * SATA 1 Support, SATA 3 Not Suppot.
Speed	5400rpm
Capacity	500GB(Max)
Solid State Drive	**mSATA SSD, Removable**
Vendor	SanDisk (BA59-03232C)
Supports	SATA host controller support 48bit LBA
Average Access Time	Read : Up to 450 MB/S Write : Up to 350 MB/s
Interface	SATA3 (6.0Gbps) * SATA 1,2 Support.
Speed	6.0Gbps

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Capacity	128GB(Max.256GB)
Network Tools	
LAN	Integrated 10/100/1000 Mbps Ethernet
Controller	RTL8111E
Vendor	Realtek
Features	RJ45 Output
Wireless LAN	Jackson Peak2 2x2 Combo (BA59-03294A) * WiDi Support
Module	802.11a/g/n 2x2 WLAN and BT4.0 (BLE , BT3.0 +HS)
Type	Mini Card half size
Interface	WLAN(PCI-E), BT(USB2.0)
Chipset	Intel Centrino Advanced-N 6235
Max. Link Speed	Wi-Fi Rx/Tx Throughput 300Mbps (Link Speed is only standard value, Actually value will decided by each environmant)
Antenna	2 Antenna Support : WLAN (2Tx/Rx)
Wireless LAN	Atheros WB225 (BA92-08418A)
Module	802.11b/g/n 1x1 WLAN and BT 4.0 (BLE , BT3.0 +HS)
Type	Mini Card half size
Interface	WLAN(PCI-E), BT(USB2.0)
Chipset	AR9485(WLAN) + AR3012(Bluetooth)
Max. Link Speed	Wi-Fi Rx/Tx Throughput150Mbps (Link Speed is only standard value, Actually value will decided by each environmant)
Antenna	1 Antenna Support : WLAN (1TX, 1RX), BT(1TX/RX)
I/O Interface	
Memory Card Reader - maximum support capacity	**3-in-1(SD/ SDHC/ SDXC)** SD (SDHC +SDXC) SDHC : 32GB SDXC : 1TB
Controller	GL823
Vendor	GENESY
Vendor	
Express Card Slots	N/A
I/O Ports	
USB Port	1 X USB 3.0 (Chargeable→ iphone Recharge), 2 X USB2.0
VGA Port	mini VGA Adapter (Option) [BA39-01189A]
Audio Jacks	HeadPhone-out, MIC-in Combo (4pole) * US , L/R/G/M
Wired LAN	RJ45
HDMI	1 x HDMI
Security Slot	N/A
Power	1 x DC-in jack for AC adapter (3Pie)
Input Devices	
Keyboard	
Type	Chicklets

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Specification	Travel length : 1.5 mm, height : 3.9 mm, Pitch : 19.05mm
Key numbers	80 - key (US,KOR,RUS,SEK) 81- Key (UK,FRA, GER, SPA, ITA)
Num Keypad	N/A
Touchpad	Standard Touchpad with 2 buttons (with gesture function), 99.0 x 53.0
LED Indicator	Power, AC-in / battery, HDD, WLAN
Security Solutions	
TPM(Option)	Trusted Platform Module 1.2
Interface	LPC
Controller	SLB 9635 TT 1.2
Vendor	Infineon
Application	Omnipass / TPM Host SW
Power and Power Management	
System power management	
Power management features	ACPI V2.0 compliant S0 ~ S5, C1~ C6 Mode
Standard battery	
Model code	AA-PLWN4AB
Type	Li-Polymer
Details of cell	4 cells
Battery capacity	6890mAh
Battery rating	52Wh
Voltage	7.56V
Color	Black
Dimension	265.8*104.11*6mm (W x D x H)
Weight	approximate 315g
Recharging Time	approximate 3 hours
Vendor	SDI, Dynapack
AC Adapter	
Model Name	AD-4019P (BA44-00279A)
Output Power	40W
Dimension	92.5 x 38.5 x 27.5mm (W x H x D)
Weight (AC Adapter)	175g (Max)
Worldwide Compatibility	Auto-sensing 100 - 240VAC
Line Frequency	50 / 60Hz
Adapter Rating - Input	100 VAC ~ 240 VAC, 1.0 A
Adapter Rating - Output	19.0VDC / 2.1A
System Dimensions	
Pyxical Information	
Dimensions (W X D X H)	315.1 x 218.9 x 19.9mm
Weight	1.64Kg (W/ SSD) 1.69Kg(W/ HDD)
- Condition	Full System with 4 cell Battery (With Bag: ±0.06Kg, WithOut Bag: ±0.04)
Package dimensions (W x D x H)	All Nation Common (With bag) 386 x 136 x 345 mm (Without bag) 395 x 330 x82 mm

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Design	
LCD Back	Aluminum
LCD Front	Glass
System Top	Aluminum
System Bottom	PA/GF 50%
OS	
Operating system	Win8

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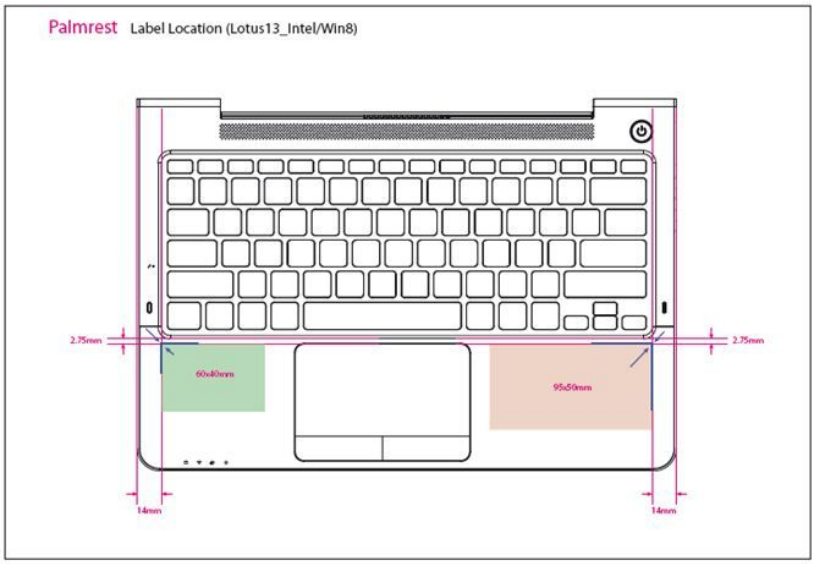
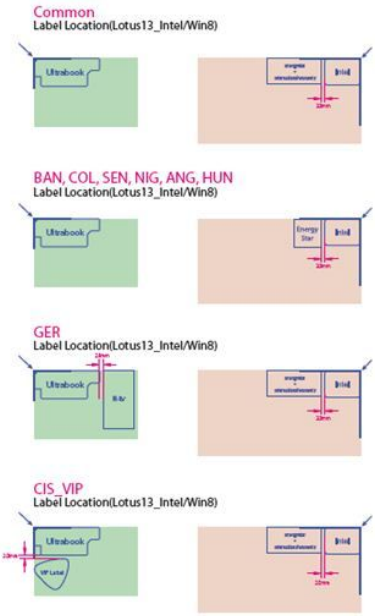
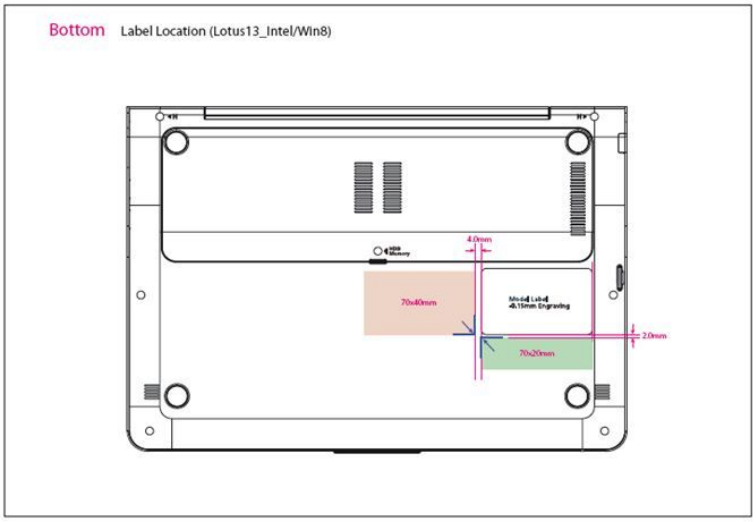
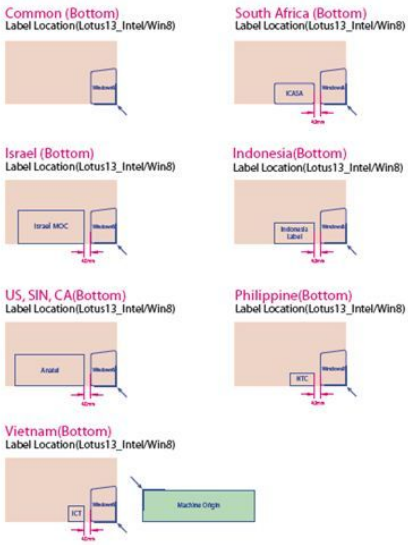
Label Location









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2.3. Comparing product specifications

Category	Spec	Lotus-13 TSP	HP Folio 13	Acer Aspire S3	Asus UX31A
		ULV i5 / 500G + 24G iSSD 4G / Intel HD / Touchscreen	ULV i5 / 128G SSD 4G / Intel HD	ULV i5 / 320G + 20G iSSD 4G / Intel HD	ULV i5 / 128G SSD 4G / Intel HD
Display	Touchscreen	O	X	X	X
	Brightness	300nit	200nit	200nit	300nit / 350nit
	Resolution	HD	HD	HD	HD+ / FHD
	Anti-reflective	O	X	X	O
Scalability	Storage	7mmH HDD+24GB Issd mSATA SSD	SSD	7mmH HDD + 20GB iSSD SSD	SSD
	Memory	Max. 12GB (1xSo Dimm)	Max 8GB (1xSo Dimm)	Max 8GB (1xSo Dimm)	Max 8GB (1xSo Dimm)
Thin & Light	Z-Height (mm)	19.9	18.0	13~17	3~18.3
	X-Y size (mm)	315.1 x 218.9	318 x 220	323 x 219	325.1 x 216
	Weight	1.64Kg (W/ SSD) 1.69Kg(W/ HDD)	1.49kg (w/SSD)	1.4kg (w/SSD)	1.3kg (w/SSD)
	CMF	Aluminum + PC GF	Aluminum + Plastic	Aluminum + Plastic	Aluminum
Battery	Battery Life	TBD	9.25hrs	5.2hrs	7hrs
	Capacity	52Wh	59Wh	36.4Wh	50Wh
Connectivity	I/O Port	Full HDMI, RJ45, VGA Adapter	Full HDMI, RJ45	Full HDMI, RJ-45 Adapter	Full HDMI, RJ-45 Adapter
Etc	Backlit KBD	X	O	X	O

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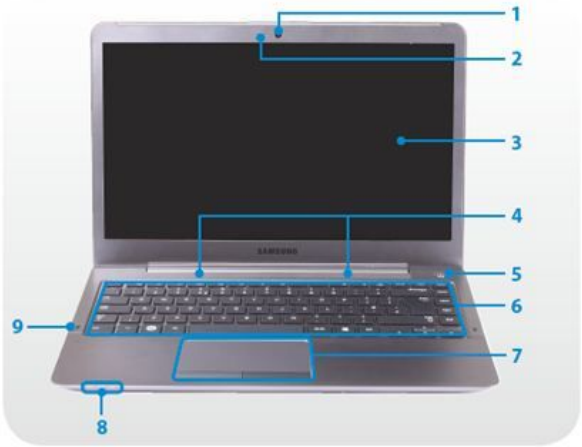
2.4. Function of Product

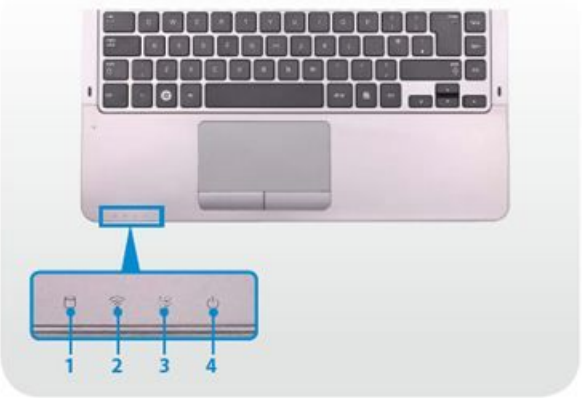
Front View

- The pictures used for the cover and the main body in the User Manual are those of the representative model of each series. Therefore the colors and appearance of the pictures may differ from the actual appearance of the product depending on the model.
- The items marked as optional may not be provided or may be provided in different locations.



1	Camera (Optional)	Using this camera, you can take still pictures and record video. You can take a picture or make a movie using the **Charms** > **Start** > **Camera**.
2	Camera operating indicator (Optional)	This indicates the camera operating status.
3	LCD or Touch screen	The screen images are displayed here. It works as a touch screen in models that support the touch screen feature.
4	Speaker	A device used to generate sound.
5	Power Button ⏻/I	Turns the computer on and off.
6	Keyboard	A device to enter data by pressing the keys.
7	Touchpad/ Touchpad Buttons	The touchpad and touchpad buttons provide functions similar to the mouse ball and buttons.
8	Status Indicators	Shows the operating status of the computer. The corresponding operating LED is lit when the corresponding function operates.
9	Microphone	You can use the built-in microphone.

Status Indicators



1	HDD/ODD	This turns on when the hard disk is or ODD being accessed.
2	Wireless LAN	This turns on when the wireless LAN is operating.
3	Charge Status	This shows the power source and the battery charge status. ● **Green:** When the battery is fully charged or the battery is not installed. ●/● **Red** or **orange:** When the battery is being charged. ● **Off:** When the computer is running on battery power without being connected to AC adapter.
4	Power	This shows the computer operating status. **On:** When the computer is operating. **Blinks:** When the computer is in Sleep mode.

Right View

► **For 13.3 inch models**

1	USB 2.0 Port (Optional)	You can connect USB devices to the USB port such as a keyboard/mouse, digital camera, etc.
2	Multi Card Slot (Optional)	A card slot supports multi cards.

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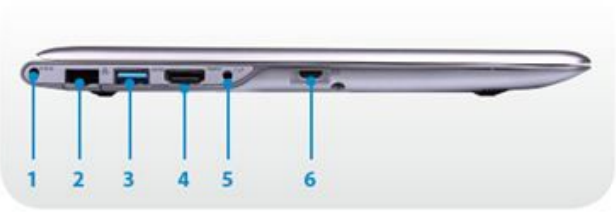
Left View

► For 13.3 inch models



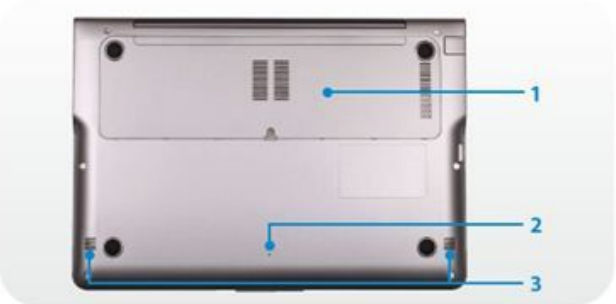
What is a chargeable USB port?

- USB device accessing and charging functions are supported.
- The USB charging function is supported regardless of whether the power is turned on or off.
- Charging a device through a chargeable USB port may take longer than general charging.
- Using the Chargeable USB function when the computer is running on battery power reduces the battery usage time.
- The user cannot evaluate the charging status of the USB device from the computer.
- This may not be supported for some USB devices.
- You can turn the Chargeable USB function **ON/OFF** by selecting the **Settings** > **Power Management** > **USB Charging** option. (Optional)

1	DC Jack	A jack to connect the AC adapter that supplies power to the computer.
2	Wired LAN Port	Connect the Ethernet cable to this port.
3	USB 3.0 Port or Chargeable USB 3.0 Port (Optional)	USB ports to which you can connect USB devices as well as a chargeable USB port are provided. Using a chargeable USB port, you can access or charge a USB device. The port can be distinguished by the figure (or) printed on the port of the product. For Windows XP, the USB 3.0 feature may be restricted.
4	Digital Video/Audio Port (HDMI) (Optional)	You can connect an HDMI cable to this port. Using this port, you can enjoy digital video and audio on the TV.
5	Ear-set / headset Jack	This is the jack for connecting an ear-set or headset.
6	Mini monitor Port	A port used to connect a monitor, TV or projector supporting a 15pin D-SUB interface. You can connect a VGA adapter (optional).

Bottom View

► For 13.3 inch models



1	Memory Compartment Cover	The main memory is installed inside the cover.
2	Battery Emergency Hole	This hole is to cut the power supply to the battery. Insert and press one end of an unfolded paper clip into the hole it to cut the power to the battery. For more information, refer to **About the function to cut the power supply to the internal battery** in the Safety Precautions. The location of the Emergency Battery Hole may differ depending on the model.
3	Speaker	A device used to generate sound.

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Keyboard

Keyboard arrangement and size can differ to by each country.

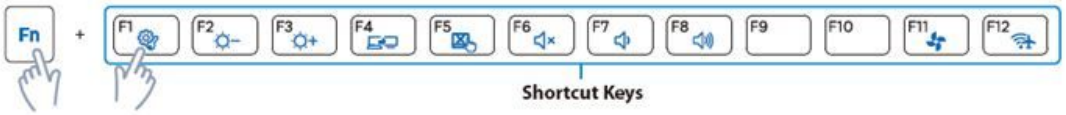
○ : KBD Water Check sheet Location

Shortcut Keys

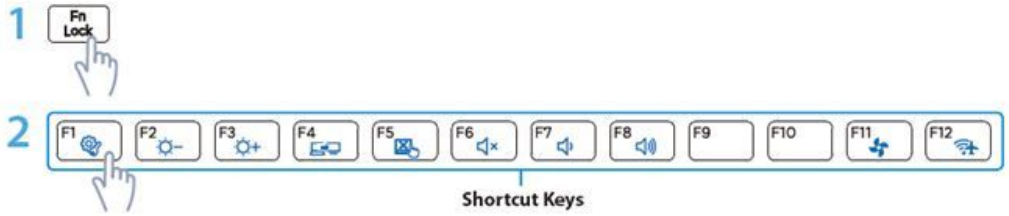
Press both the **Fn** key and hot key at the same time.

Alternatively, press the **Fn Lock** key as well as a hot key to use the hot key functions more easily.

► **Method 1**



► **Method 2**



Shortcut Keys	Name	Function
F1	Settings	The Samsung software control program, the **Settings**, is launched.
F2 F3	Screen Brightness Control	Controls the screen brightness.
F4	CRT/LCD	Switches the screen output to the LCD or external monitor when an external monitor (or TV) is connected to the computer.
F5	Touchpad	Turns the Touchpad function on or off. When using an external mouse only, you can turn the Touchpad off.
F6	Mute	Press this button to turn the audio on or off.
F7 F8	Volume Control	Controls the volume.
F11	Silent Mode	Reduces the Fan noise so that users can use the computer without hearing noise.
F12	Airplane Mode	Turns all wireless network devices on or off. (Only for models with a wireless network device.)

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Other Function Keys (Optional)

Performs the right-click mouse function (touchpad).

- If you press the **Fn Lock** key, you can use the hot key functions without pressing the **Fn** key.

  - **If the Fn Lock function is On**: You can use the hot key functions without pressing the Fn key.
  - **If the Fn Lock function is Off**: You can use a hot key function by pressing the Fn key + the hot key at the same time.

If the hot keys do not work properly, you have to install the **Settings**.

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2.5. New Technology / ability

Inner Battery

Please refer to the following instructions when running the computer on battery power without connecting the AC power.

This computer is equipped with an internal battery.

Precautions

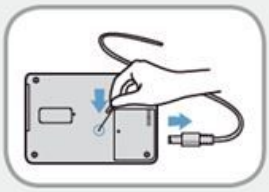
- **Users cannot remove or replace the internal battery.**
- **To remove or replace the battery, use an authorized service center in order to protect the product and users. You will be charged for this service.**
- Use only chargers specified in the User Manual.
- Never heat the battery pack, put it near or in a fire or use at a temperature higher than 60°C, as this may cause fire.
- Please refer to the system operation environment of this manual and operate and store the battery at room temperature.

- Before using the computer for the first time, make sure to connect the AC adapter and charge the battery completely.
- The images used for the illustration are of a representative model, therefore the images may differ from the the actual product.

The location of the internal battery

Reference data

Cutting the power to the internal battery (for corresponding models only.)



- For products with built-in batteries, customers cannot remove the battery.
- In the case of flooding, lightning or explosions, you can cut the battery power by inserting an object such as a paper clip into the [Emergency Hole] at the bottom of the computer.
- Disconnect the AC adapter and insert an object such as a paper clip into the hole at the bottom of the computer to cut the battery power.

In the case of flooding, lightning or explosions, cut the battery power, do not reconnect the AC adapter, and immediately contact Samsung Electronics so that the appropriate countermeasures can be taken.

Battery replace method refered to User Manual

※ Please Refer to the Training manual chapter1.

TPM (Option)

A TPM (Trusted Platform Module) security device is a security solution that protects your personal information by saving the user authentication data on the TPM chip installed on the computer.

To use the TPM security device, you have to initialize the TPM chip in the BIOS Setup, initialize the TPM program, and then register the user.

- This function is only supported for models with TPM (security chip).
- For more information, refer to the online help for the program.
- The program version described in this manual is subject to change and the screenshots and terms used in this manual may differ from the actual product.

Setting Up the TPM

To use the TPM function, you have to complete the following steps.

1. **Initializing the TPM chip**
   Initializes the authentication information saved on the TPM chip.
2. **Installing the TPM program**
   Installs the TPM program.
3. **Registering the TPM program**
   Registers the TPM program.

If you complete the steps above, you can use the TPM function.

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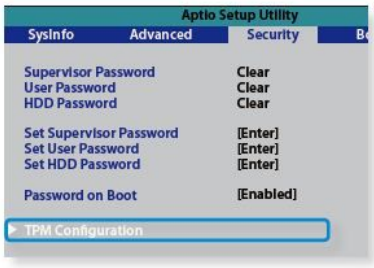
Initializing the TPM chip

When you use the TPM function for the first time or you want to register the user again, you have to initialize the TPM chip.

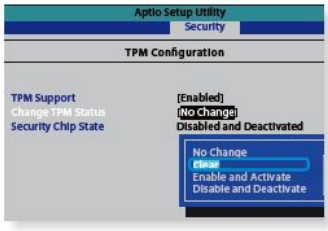
- Initializing the TPM chip erases all authentication information saved on the TPM chip. Any decision to initialize must be taken carefully.
- To initialize the TPM chip again while the TPM function is in use, you have to decrypt any existing files and folders encrypted by the TPM function first. Otherwise, you will not be able to access the files and folders after re-initialization.

1 Restart the computer.
When the Samsung logo screen appears, press the **F2** key repeatedly.

2 If the BIOS screen appears, select the **Security** > **TPM Configuration** item and press **Enter**.



3 Set the **TPM Support** item to **Enabled** and set the **Change TPM Status** to **Clear**.

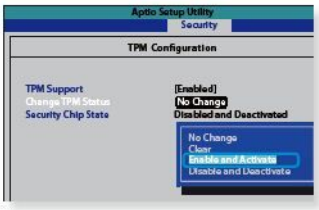


4 Press the **F10** key to save the changes.

5 When the system reboots, press the corresponding key(s) by following the onscreen instructions.

6 When the computer restarts automatically and the Samsung logo screen appears, press the **F2** key repeatedly.

7 Select the **Security** > **TPM Configuration** > **Change TPM Status** item and set the item to **Enable and Activate**.



8 Press the **F10** key to save the changes.

9 When the system reboots, press the corresponding key(s) by following the onscreen instructions.

10 Press the **F10** key to save the changes. The computer automatically restarts. Initialization of the TPM chip has been completed. Now, install the TPM program and register the TPM program.

Installing the TPM program

You can install the TPM program as follows. Install the program according to the procedures below.

This program is only provided for models with S Recovery and the TPM function.

1 Run **S Recovery** and click on **System Software**.

2 Click on **System Software** Installation.

3 The **S Manager** program will be launched.
Select **TPM Host SW** and click **Install Now**.

If the system software media is supplied with the product, you can install the program by using the system software media (only when supplied.)

4 After the installation, if you click **OK**, the computer restarts.

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Registering the TPM program

1 Click the S Launcher icon , and then click **Start menu** > **Infineon Security Platform Solution** > **Security Platform Management** > **User Settings**. (with administrator authority)
Alternatively, double-click the icon on the Taskbar and run initialization with administrator authority.

2 The security authentication settings begin with the **Initialization Wizard**. When the Initialization Wizard appears, click **Next**.

If the **status not initialized** message appears, click **Yes**.
If you backup the emergency recovery file to an external storage device according to the instructions of the Initialization Wizard, you can use the TPM security device more safely.

3 Select a **Security Platform Feature** and set a **basic user password**.

4 Complete the registration according to the instructions.

5 The user registration for the TPM program has been completed. You can encrypt files and folders by using the encryption file system, and use files and folders to be encrypted by creating or copying them to the virtual drive.
The virtual drive is created in the following location.

Using the TPM program

For more information about using the TPM program, refer to the online help for the program.

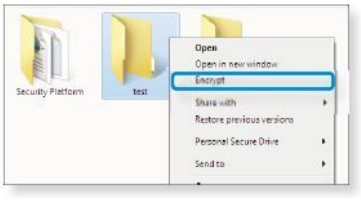
Encrypting a file (folder)

This function enables encrypting files and folders. You can safely protect documents through the Encrypt File System (EFS).

The Encrypt File System(EFS) function is supported by the following operating systems.

- Windows XP Professional
- Windows Vista Business / Enterprise / Ultimate
- Windows 7 Professional / Enterprise / Ultimate
- Windows 8 Pro / Enterprise

1 Right-click over the folder (or file) to be encrypted, and select **Encrypt** from the pop-up menu.



2 If the **Confirm Attribute Changes window** appears, select the range to apply the encryption to and click **OK**.
(This dialog box only appears when the folder is encrypted.)

If the current operating system is Windows 8/7/Vista, the user account control window appears. In this case, click **Continue**.

3 In the **user authentication** window, enter the **Basic user password** you entered when registering the user and click **OK**.

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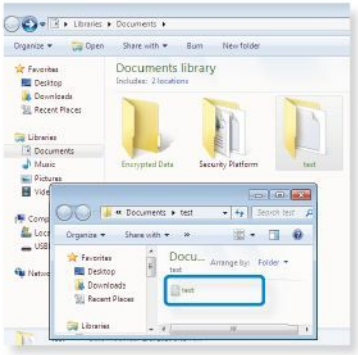
4 You will be able to confirm that the color of the folder (file) name in the encrypted folder has been changed to green.



Opening an encrypted folder (file)

1 Double-click an encrypted folder (file).

2 If the user authentication window appears, enter the **basic user password** you entered when registering the user and click **OK**.

3 The folder (file) opens.

When the virtual drive (PSD) does not appear

You can only use the virtual drive (PSD) when you have selected the Personal Secure Drive (PSD) option during the program registration.

If you have not selected the option during the registration, complete the following steps.

1 Click **start** > **All Programs** > **Infineon Security Platform Solution** > **Manage Security Platform** and click the **User Settings** tab > **Security Platform Features** and then **Configure**.

2 When the **Initialization Wizard** appears, select **Personal Secure Drive (PSD)** and enter the user password.

3 Click **Next** several times according to the instructions of the **Initialization Wizard** to finish the wizard.

Decrypting an encrypted folder (file)

1 Right-click over an encrypted folder (file) and select **Decrypt** from the pop-up window.

2 If the user authentication window appears, enter the **basic user password** you entered when registering the user and click **OK**.

3 The folder (file) is decrypted.

Using the virtual drive (Personal Secure Drive: PSD)

The virtual drive (PSD) is a virtual space to save and manage confidential data. In the created virtual drive (PSD), you can create files and folders as with a normal drive (e.g. drive C:) and you can use confidential data saved on another drive by copying the data to the virtual drive (PSD).

When the virtual drive (PSD) is not loaded

To use the virtual drive (PSD), the virtual drive (PSD) should be loaded first. If it is not loaded, you can load it according to the procedures below.

1 Click the S Launcher icon and click **Start menu** > **Infineon Security Platform Solution** > **Security Platform Management**. And then click the **User Settings tab** > **Configure Security Platform Features**.

2 In the load window, enter the basic user password and click **OK**.

3 If you click **Start** > **Computer**, you will be able to confirm that the Personal Secure Drive is created.

Note that when you have copied confidential data to the PSD, the original data files are not encrypted.

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When you have to register again (to erase the authentication information on the TPM chip)

To register a user again, you need to delete the existing authentication information saved on the TPM chip and then clear the TPM chip.

Register the user in the following order.

1. Delete the virtual drive.
2. Delete the existing authentication information saved on the TPM chip.

Deleting the existing authentication information saved on the TPM chip.

1. On the desktop, select the **Charms menu** > **Settings** > **Control Panel** > **Programs** > **Uninstall a program** > **Infineon TPM Professional Package**. Then click **Uninstall**.
2. If the message window appears, click **Yes** to remove the program.
3. If the **Infineon Security Platform** message appears, click **No**.
4. Click the **Windows Explorer** icon in the taskbar on the Desktop.
5. In **View** > **Options** > **Folder Options** > **View** > **Hidden files and folders** item, select the Show hidden files, folders, and drives option and click **OK**.
6. Click the **Start** > **Computer** > **Drive C:** > **ProgramData** folder and delete the **Infineon** folder.
7. Now the TPM Program has been deleted.

   To use the TPM function, please repeat the procedures of the **TPM chip initialization** process.

Deleting the virtual drive

If a virtual drive has been created, you have to delete the virtual drive before deleting the existing authentication information saved on the TPM chip.

1. Right-click over > and click **Personal Secure Drive** > **Create/Manage**.
2. Click **Next**.
3. Enter the password that you entered when registering the TPM program and click **Next**.
4. Select Delete selected PSD and click **Next**.
5. Select "**I want to permanently delete my Personal Secure Drive without saving an unencrypted copy of its contents.**" and click **Next**.
6. Click **Next** and then **Finish**.
7. Now the virtual drive has been deleted.

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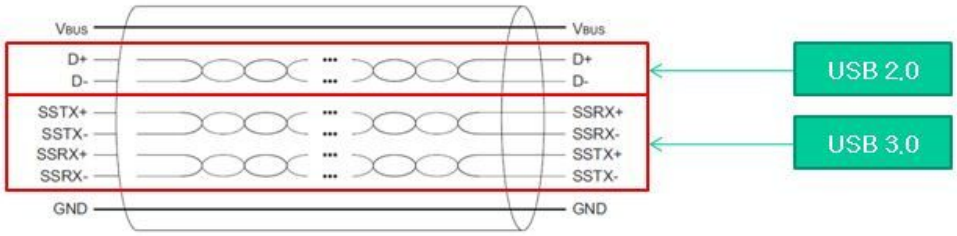
USB3.0

	USB3.0 (SuperSpeed USB)	USB2.0
Speed (Data rate)	5.0 Gbps	Low-speed (1.5 Mbps) Full-speed (12 Mbps) High-Speed (480 Mbps)
Data Interface	. 4-wire differential signaling separate from USB2.0 signaling . Simultaneous bi-directional data flows	. 2-wire differential signaling . Uni-directional data flow with negotiated directional bus transactions
Cable Signal Count	4 for SuperSpeed data 2 for non-SuperSpeed data	2 for low/full/high-speed data

- USB 3.0 Cable



- USB 3.0 has the backward compatibility for USB 2.0

USB 3.0 HOST CONTROLLER

FEATURES

- Compliant with Universal Serial Bus 3.0 specification Revision 1.0, which is released by USB Implementers Forum, Inc
  - Supports the following speed data rate as follows; Low-speed (1.5 Mbps) / Full-speed (12 Mbps) / High-speed (480 Mbps) / Super-speed (5 Gbps)
  - Supports 2 downstream ports for all speeds
  - Supports all USB compliant data transfer type as follows; Control / Bulk / Interrupt / Isochronous transfer
- Compliant with Intel's eXtensible Host Controller Interface (xHCI) Specification Revision 0.96
- Support USB legacy function
- Compliant with PCI Express Base Specification Revision 2.0
- Supports ExpressCard™ Standard Release1.0
- Supports PCI Express Card Electromechanical Specification Revision 2.0
- Supports PCI Bus Power Management Interface Specification Revision 1.2
- Operational registers are direct-mapped to PCI memory space
- Supports Serial Peripheral Interface (SPI) type ROM
- System clock: 24 MHz crystal or 48 MHz external clock.
- 3.3 V and 1.05 V power supply

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Characteristic	SuperSpeed USB 3.0	USB 2.0
Data rate	SuperSpeed(5G.0bit/s)	Low-speed(1.5Mbit/s), Full-speed(12Mbit/s) And High-Speed(480Mbit/s)
Signaling	Dual-simplex four wire differential signaling	Unidirectional data flow + negotiated directional bus transitions
Data Flows	Simultaneous bi-directional data flow	Unidirectional data flow + negotiated directional bus transitions
Cables	6 Total 4 x SuperSpeed 2 x non-SuperSpeed	2 x low,full,high-speed
Traffic Flow	Asynchronous	Polled
Packet Traffic	Explicitly routed	Broadcast to all devices
Power Management	Multi-level which supports idle, sleep, and suspend.	Port-level that has two levels of entry/ exit latency
Bus Power	50% more than USB 2.0 80% more with configured power	

iSSD

- Capacities[1]
  - 4GB, 8GB, 16GB, 24GB, 32GB and 64GB
- Ultra-small form factor
  - 16mm x 20mm 157-ball TFBGA package
    - 1.40mm height for 4/8GB capacities
    - 1.85mm height for 16/32/64GB capacities
- Interface to host
  - SATA II revision 2.6, 3.0Gbps
- High performance[2]
  - Host transfer rate: 300 MB/s
  - Sequential Read: 160 MB/s
  - Sequential Write: 100 MB/s (MLC), 125MB/s (SLC)
  - 4K Random Write (Sustained): 140 IOPS
  - 4K Random Write (Recovered): 690 IOPS
  - 4K Random Read: 2200 IOPS
- Low power consumption
  - Typical read/write[3]: 0.18W
  - Slumber mode: 60mW
- Reliability
  - Advanced wear leveling and bad block management
  - Operating temperature: 0 °C to 70 °C
  - Non-operating temperature and storage: -55 °C to +85 °C

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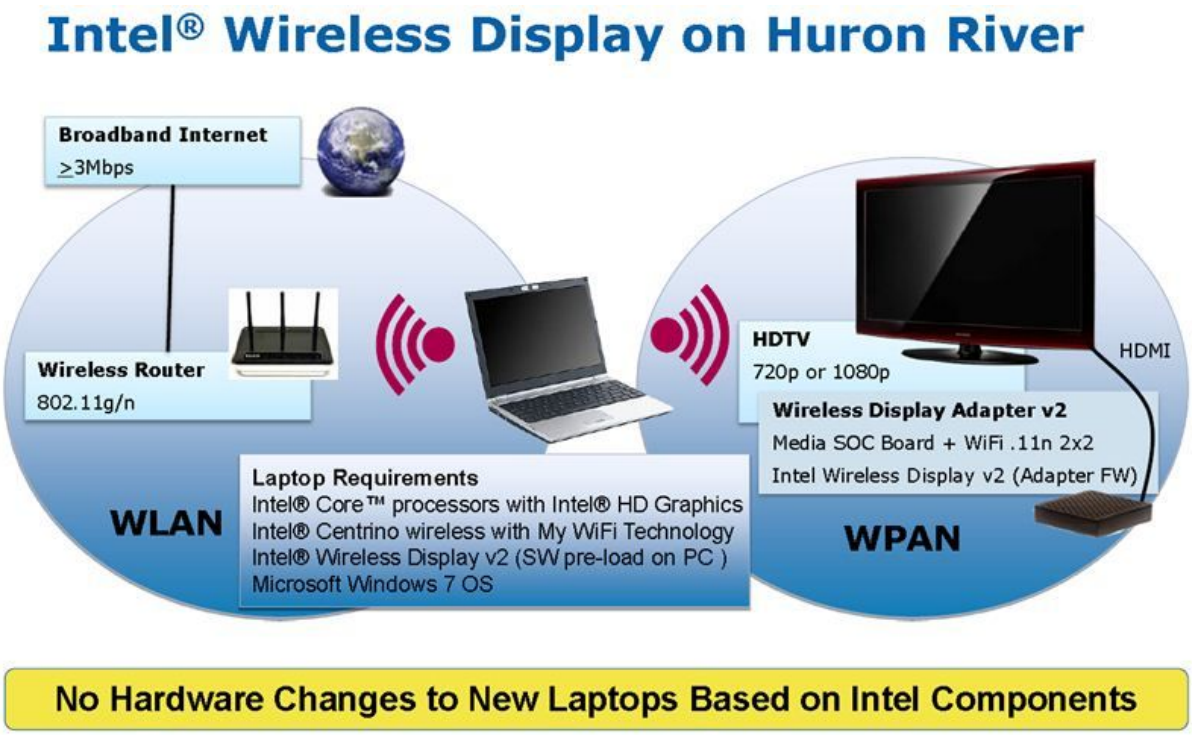
Wireless Display

※ Please Refer to the Training manual chapter1.



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Requirements

System: Intel CPU, Intel GFX, Intel WLAN
Software: My WiFi Technology, WiDi S/W, Win7
3rd vendor product: WiDi Receiver (Netgear's Push2TV PVT1000) on TV side

Requirements

WiDi Adapter

Versions Supported SPEC

Feature	2010 Features	2011 Enhancements
Standard HD media codec	•30fps motion video at 720p encode at the PC • Standard MPEG2 codec	• 30fps full motion video at 1080p encode at the PC • Standard H.264 using HW encode
Standard Display Output Protection		• Output protection via HDCP2* • Blu-ray and DVD
Display Adapter uses Standards based WiFi	• Adapter using.11bgn 1x1 radio	• Adapter using .11agn 2x2 radio
Intel Frame Capture Intel A/V Time Sync	• Graphics driver frame capture for smooth video • Best in class A/V lip-sync with 2ch stereo audio	• Surround Sound
Intel Easy Set-Up & Connect	• No remote control, no buttons on the adapter • Setup & use only requires WPAN network connection • Uses WFA WiFi Protected Setup	• Same
Intel My WiFi Optimized for Full HD 1080p Display	• It just works! • Concurrent PAN-display & LAN-network access	• 5GHz WPAN improves robustness
Display Experience	•Acceptable latency for targeted key Living Room usages • All Display Modes supported (Clone, Extended & Remote Only) • Fast Cursor	• Lower latency for keyboard, mouse, and video <300ms

Progress

Q4 '10 WiDi v2.0
Full HD, 1080p, 5GHz Support, Huron River

※ Please Refer to the Training manual chapter1.

IMAGE VIEW ▶ Comparison of two

Watch the video through the TV.

Video / music / photos (Contents Sharing)

▪ USB

▪ DLNA

2nd Monitor (Display Sharing)

▪ Intel Wireless Display

▪ Altona HDTV Wireless Adapter (UWB)

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Wireless Display Similar technology

Wisair (www.wisair.com), Atlona (www.atlona.com) HDTV Solution
-Wireless 720p transmission via Wireless USB.

IOGEAR (www.aiogear.com)
- Wireless HD Video transmission via Wireless USB (1600 X 1200 or 1680 X 1050)
- Used within 10m.

G-Max (www.gmax.com)
-Wireless Full HD (1080p) transmission via Wireless USB.

AMIMON (www.amimon.com)

Windows 8

Microsoft Windows 8 (hereafter referred to as Windows) is an operating system that is required for operating a computer.

To use your computer optimally, you need to know how to use it properly. Therefore, you'd better to learn how to use Windows by utilizing **Windows Help and Support**.

- The screen may appear somewhat different depending on the model and the operating system.
- Since this guide has been prepared based on Windows 8, some of the instructions may differ depending on the version. It may also be modified without prior notice.

Displaying Help

Press the **F1 Key** on the keyboard to display the Help.

Alternatively, place your mouse cursor over the end of the top or bottom right area on the screen to display the Charms menu.

Click Charms menu > **Settings** > **Help**.

If you are connected to the internet, you can access the most recent online Help.

Getting Started	You can view basic instructions on how to use your computer including new function(s) for the Windows OS.
Internet and Networking	After connecting to the network, you can check the Help section required to use the internet.
Security, Personal Information Protection and Account	You can check the Help information required to protect your computer and personal information.

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Windows 8 provides both the new **Start screen** mode and the **Desktop** mode of the existing OS.

Start Screen

Desktop

Start Screen

When you turn on the computer, the **Start screen** is displayed, which allows you to use the applications (Application, App, hereafter referred to as an **App**) at the same location.

1	Start Screen	Refers to the default Start screen of Windows 8.
2	App	Refers to the apps that are currently installed.
3	Displaying the Charms	The Charms is hidden at the right of the screen. Place your mouse pointer at the edge of the top or bottom right of the screen to display the Charms. Or you place your finger on the right edge of the touch pad and drag your finger toward the center, the Charms menu appears.
4	User Account	This refers to the currently used user account.
5	Charms	This refers to the menu that allows you to use functions such as Search, Share, Start, Device and Settings.
6	Desktop	Switches to Desktop mode.
7	Camera	Allows you to take pictures or make a movie.

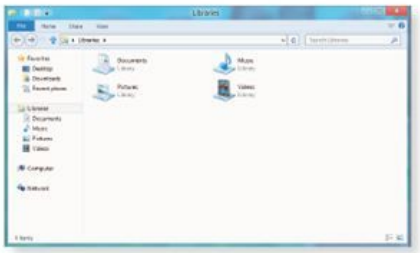
Desktop

This provides similar functions to those provided by the Desktop in prior Windows versions.

1	Desktop	Refers to the Desktop.
2	Displaying the Charms	The Charms is hidden at the right of the screen. Place your mouse pointer at the edge of the top or bottom right of the screen to display the Charms.
3	Charms	This refers to the menu that allows you to use functions such as Search, Share, Start, Device and Settings.
4	Switching to the Start Screen	Click the corner of the bottom left of the screen to switch to the Start screen.

Displaying Documents and Files

Click Windows Explorer in the taskbar on the Desktop to search for documents and files.



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The Charms is a new type of menu that combines the Start menu with the Control Panel of existing Windows.

The Charms allows you to quickly configure the device(s) connected to your computer, search for App(s)/file(s), and use the sharing function, etc.

Activating the Charms

If you move your mouse pointer to the top or bottom right corner of the screen, the **Charms** appears.

Search	If you want to search for a program or file in the App(s)/ Settings/File(s), simply enter a keyword in the Search charm and start Search. You can also search within an App or on the Web.
Share	You can use this menu to transfer a picture or file to another user. You can easily share pictures or files with other users simply by associating multiple Apps with the Share charm.
Start	You can move to the Start screen.
Device	As this allows you to move directly to a desired device, you can handle tasks such as importing pictures from a digital camera, streaming a video to your TV or transferring files to a device on the current screen.
Settings	The Settings charm allows you to perform basic tasks such as adjusting the volume, turning off the PC, etc. If you select the Settings charm while a specific App is running, the settings for the currently running App are displayed.

Changing the Settings

Frequently used Windows menus are collected.

Click the **Charms** > **Settings**.

Icon	Name	Function Description
	Wireless Network	You can connect to a wireless network. Select a wireless network to connect to.
	Adjusting the Volume	You can adjust the volume or mute the sound.
	Screen Brightness	You can adjust the screen brightness.
	Notice	You can set the interval at which an App sends notices.
	Power	You can turn off your computer or select the Power Options.
ENG	Language	You can set the Language.

Change PC settings

You can change more settings.

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An App refers to an application program (hereafter referred to as an **App**). In a larger sense, it refers to all the software programs installed on the operating system.

Window 8 provides basic Apps for frequently performed tasks.

Starting/Exiting an App

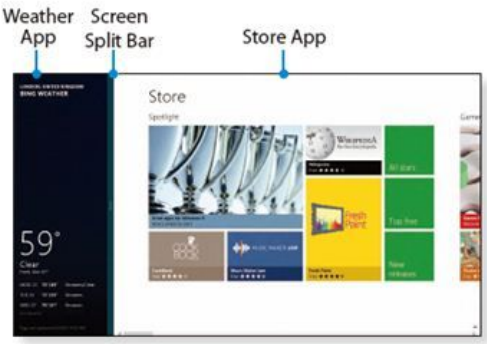
Click on an App in the Start screen to activate it.

To exit the App

1. Move your mouse pointer to the top of the screen. Your mouse pointer changes to a **hand shape**.
2. Click and hold your mouse button and then drag it to the bottom of the screen. The App moves downward and disappears and exits.

Running Two Apps at the Same Time

1. Select the **Apps** in the **Start screen**.
2. Move your mouse pointer to the top of the screen. Your mouse pointer changes to a **hand shape**.
3. If you click and hold your mouse button and move left or right, you can split the screen to display multiple Apps.
4. Move the **Screen Split Bar** to change the screen split ratio. Supported screen split ratios are 3:7 or 7:3.



Ex) If you run the Weather App and Store App at the same time

Using Apps

Displaying Currently Running App(s)

1. Move your mouse pointer to the top left corner of the screen to display the last run App.
2. Then, move your mouse pointer down to display a list of the currently running Apps in order.
3. Click on an App in that list or drag it to the center of the screen. Now, you can check the selected App which is currently running.

Right-click over the App in the list and click **Close** to exit the App.

Adding/Removing an App to/from the Start Screen

Click **Start screen** > **right-click** your mouse button.
Click **All Apps** at the bottom of the screen to display all the Apps that are currently installed.

1. If you right-click over the App to be added, the relevant menu is activated at the bottom of your screen.
2. Click **Pin to start** or **Unpin from Start**.

Ex) When removing an App in the Start screen

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Using the Windows Store

If you run the App Store in the Start screen, the Apps in the Windows Store are displayed.

However, a Microsoft account is required to purchase App(s) in the Windows Store.

Continue after registering your Microsoft Account in the Charms.

Configuring your Microsoft Account

A Microsoft Account allows you to synchronize your settings with other device(s) running Windows 8 online allowing you to share file(s) or settings.

You should register a Microsoft Account to download or purchase App(s) from the Store.

1. Run the **Charms** and click **Settings** > **Change PC Settings**.
2. Clic **Users** > **Your Account** > **Switch to a Microsoft account**.
3. Register your account through the following relevant procedures.

You can use the following convenient hot keys in Windows 8.

Function	Hot Keys	Function Description
Displaying the Start Screen	Windows Key	Switches to Start mode.
Displaying the Desktop	Windows Key + D	Switches to Desktop mode.
Running the Charms	Windows Key + C	Activates the Charms.
Locking the Screen	Windows Key + L	Locks the screen.
Opening the Ease of Access Center	Windows Key + U	Opens the Ease of Access Center configuration.
Opening the Second Screen Settings	Windows Key + P	Opens the External Monitor Settings menu.
Opening the Advanced Management Tool	Windows Key + X	Opens the Advanced Management Tool.
Exit App	Alt + F4	Exits the currently running App.

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Touch Screen (Option)

A touch screens allows you to use your computer without a keyboard or mouse.

The touch screen instructions also describe the functions which can be activated via the touch screen.

- If you are using your computer for a long period of time, it is recommended using a keyboard and mouse.
- Make sure to operate your touch screen using your finger. If you operate your touch screen with a hard object, it will not work.
- If there any foreign substances such as insects or water on the touch screen, your touch screen will not work properly.

Using a Touch Screening

- This function is supported by Windows 8 touch screen models and is activated by some applications.
- In addition, please note that supported functions may differ depending on the application.

Learning about Basic Touch Screen Operations

The touch screen interface is supported in Windows 8.

You can easily learn how to use the touch screen conveniently.

Touch Operation		Function Description
	Dragging from the right edge toward the center	Displays the Charms menu which is hidden at the right of the screen.

Touch Operation		Function Description
	Dragging from the left edge toward the center	Displays the last run App.
	Dragging from the bottom edge upward or from the top edge downward	Displays the options for the currently running application.
	Touching slightly (Clicking)	Slightly press with your finger to select an item. (If you slightly touch a specific menu, option, application icon, etc. on the screen, the corresponding capability is activated.)
	Touching twice (Double-clicking)	Slightly press twice with your finger to select an item.
	Touching and dragging	Moves the selected target or moves to the next page. You can draw a picture or write some letters with this operation.

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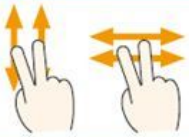
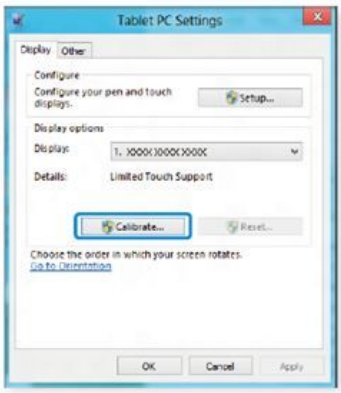
Touch Operation		Function Description
	Rotating with more than 2 fingers	Rotates the selected target.
	Spreading 2 fingers widely or bringing them towards each other	Zooms in or out of the target.
	Touching and holding for a while (Right-clicking your mouse)	Provides the same function as right-clicking your mouse button. Displays the additional options which can be set for the selected target or more detailed information.
	Touching and dragging 2 fingers up/down, left/right (Scrolling)	Moves up/down, left/right. Provides the same function as scrolling your mouse.

Calibrating the Screen

If you are using the touch screen for the first time or the pointer is not aiming correctly and the accuracy has declined, calibrate your screen.

The screen calibration process may differ depending on the OS. It may not be supported by some operating systems.

1 On the Desktop, press the **Charms menu** > **Settings** > **Control Panel** > **Tablet PC Settings** > **Calibration**. Then press **OK**.



2 When the **Calibration** window appears, press the + mark by following the onscreen instructions.

3 The input location of your touch screen is calibrated.

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Entering Characters

You can enter characters using the **keyboard** and the **Tablet PC Input Panel**.

Entering characters may differ depending on the operating system and is not supported by some operating systems.

If you are using your computer for a long period of time, it is recommended using the keyboard.

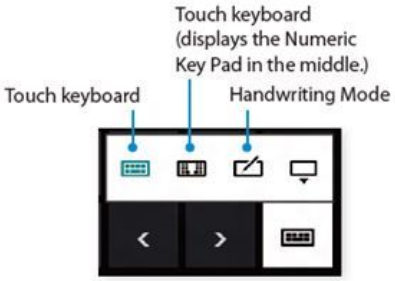
Entering characters is explained using an example with notepad.

Using the Tablet PC Input Panel

The **Tablet PC Input Panel** is an onscreen keyboard provided by **Windows**.

Follow the descriptions and illustrations on how to use the **Touch keyboard** and **handwriting mode**.

1. Click the **Quick Starter** in the taskbar on the Desktop.
   Then click **Start menu** > **All Programs** > **Accessories** > **Notepad**.
2. Put your hand on the Notepad screen to display the cursor.
3. On the Desktop, press the at the right of the taskbar to display the **Tablet PC Input Panel**.

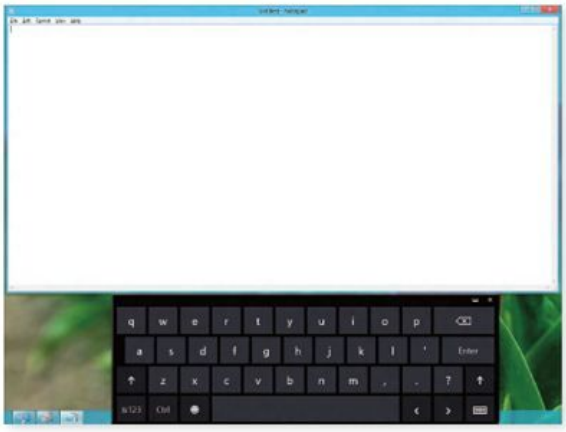


[Input Mode]

Entering characters using the Touch keyboard

The **Touch keyboard** has the standard keyboard layout which allows you to select keys to enter characters.

1. Press the **Touch keyboard** icon in the Tablet PC Input Panel.
2. Press the keys to enter your characters.



Entering characters in Handwriting Mode

You can enter characters by writing them in the Handwriting Mode Input Panel on the touch screen.

1. Press the **Handwriting Mode** icon in Tablet PC Input Panel.
2. Write characters in the input area of the **Handwriting Mode Input Panel** on the touch screen.

3. Press the **Insert** button to enter characters.

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Note for Using the Touch Screen

- When using the touch screen, make sure to keep your hands clean and dry.

  In humid environments, dry off your hands and the surface of the touch screen before using the touch screen.

- Do not directly spray LCD display cleaner onto the touch screen. The cleaner may soak through the bottom of the touch screen. When using an LCD display cleaner, spray it onto a cloth to clean your touch screen.

  (If you use an abrasive cleaner or cloth, your touch screen may be damaged.)

- Do not apply severe shocks or impacts to the touch screen or press on it with a sharp object such as a pen.

  This may result in your touch screen being damaged.

- If your finger touches the screen too softly, the touch may not be recognized.

- When touching the screen, press on the item precisely with your finger and take care not to touch any other items.

- The touch screen sensors are located at the edges of the touch screen.

  When installing a protective cover and accessory, be careful not to cover the edges of the touch screen.

- Be careful not to damage the edges of the touch screen.

  If the edges of the touch screen are damaged, the touch screen may not work properly.

- If there any foreign substances such as insects or water on the touch screen, your touch screen will not work properly. Use your touch screen after removing all foreign substances.

- If you operate your touch screen with a hard object such as a nail, pen, etc., it will not work.

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2.6. Hardware

New H/W - ISSD

The SanDisk® integrated Solid State Drive (iSSD)

A fast, light weight and affordable storage solution for Smartbooks, Ultra-thin PCs and Tablets that require high performance combined with an innovative form factor and low cost.

As social networking increases, a market need has developed for a storage solution that will not only provide mobile benefits such as smaller designs, cooler and quiet operation and lower power consumption, but one that will also deliver enhanced user performance.

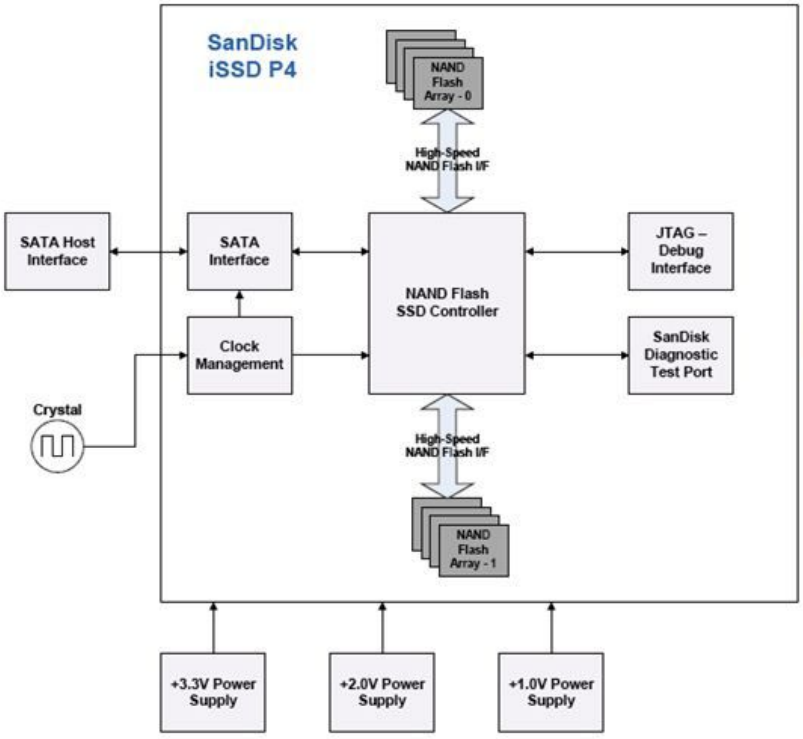
The SanDisk iSSD drive delivers all the benefits of SSD: It is rugged and reliable, power efficient and small in size. In addition, being an SSD in a BGA form factor and tiny in size, enables the SanDisk iSSD drive to be embedded into a larger variety of new thinner and slicker devices, such as smartbooks, Ultra-thin PCs and media tablets, with surprising and new innovative designs.

Such thinner and lighter computing devices are also enabled due to SanDisk iSSD drive's embedded design which allows manufactures to avoid the additional weight and thickness required by a connector based SSD solution. Thinner storage solutions like the SanDisk iSSD drive also enable fan less designs and greater airflow contributing to a cooler device operation, an additional benefit for the user on the go.

Moreover, with a SATA interface, commonly found in PC devices, the SanDisk iSSD drive enables easy system integration with mobile PC devices as well as high productivity capabilities. Thus, allowing end users to reap the benefits of optimized PC performance and user experience even in the smallest computing devices and when they are away from home.

Product highlights

- Cost Efficient
- Performance: Sequential R/W up to 160 MB/s / 100 MB/s [1,2]
- Size:16 mm x 20 mm x 1.85 mm
- Form Factor: 157 ball BGA with 0.5 mm pitch
- Weight: As low as 0.83g
- Capacity: 4GB, 8GB, 16GB, 32GB, 64GB[2]
- Interface: SATA
- Quiet and cool operation



Lotus-13R-TSP MainBoard

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– Advantage : More faster booting speed.(up to 25%)

Table	With ISSD	Without ISSD
BIOS Post	4.88	4.87
Boot complete	16.73	30.1
Boot time (BIOS Post + Boot complete)	21.61	34.88

– More faster application speed..

– Control & work

: Express Cache Driver Control by self, User can only turn on/off.

On Easy Setting, can turn on/off .

Default setting is ON.(Game,Balance,Library,Eco)

- If it eliminated in device manager, there is no problem on system .

But to use Express Cache again, reinstall the Driver.(included in SW MEDIA CD)

- NOTICE

On the BIOS, don't change the booting sequence.

- ISSD is only cache . It's not an HDD for OS
- What is displayed on the BIOS recognizes the device is intended to confirm.
- ISSD will not be used as a HDD.
- The user can not specify otherwise.

(1) Intel's 2012 Mobile Platform : Cheif River

◆ **Cheif river chipset specification**

Chips	Item	specification	Memo
CPU	Main Core	Dual core with enhanced performance Quad core with enhanced performance	
	Cache	L1: 32KB instruction+32KB data L2 : 256KB shared instruction/data L3: up to 3MB up to 4MB up to 6MB (i7-3615QM)	
	Core speed	Quad core 2.3GHz (i7-3610QM)	
	DDR3 memory	1333MT/s, MAX 8GB 1600MT/s, MAX 8GB	
	SODIMM support	Dual channel Symmetric/Asymmetric support	
	Integrated Graphics Controller	CxSR ,GPMT ,Intel ,2DDT,RC6	
HM76	DMI support	10 Gb/s each direction, full duplex	
	PCI Express	8 PCIE root ports, PCIE 2.0 specification running at 5.0GT/s	
	Supports	ACPI 3.0b, DMIX4, Up to six SATA 3Gb/s ports, two SATA 8Gb/s ports	

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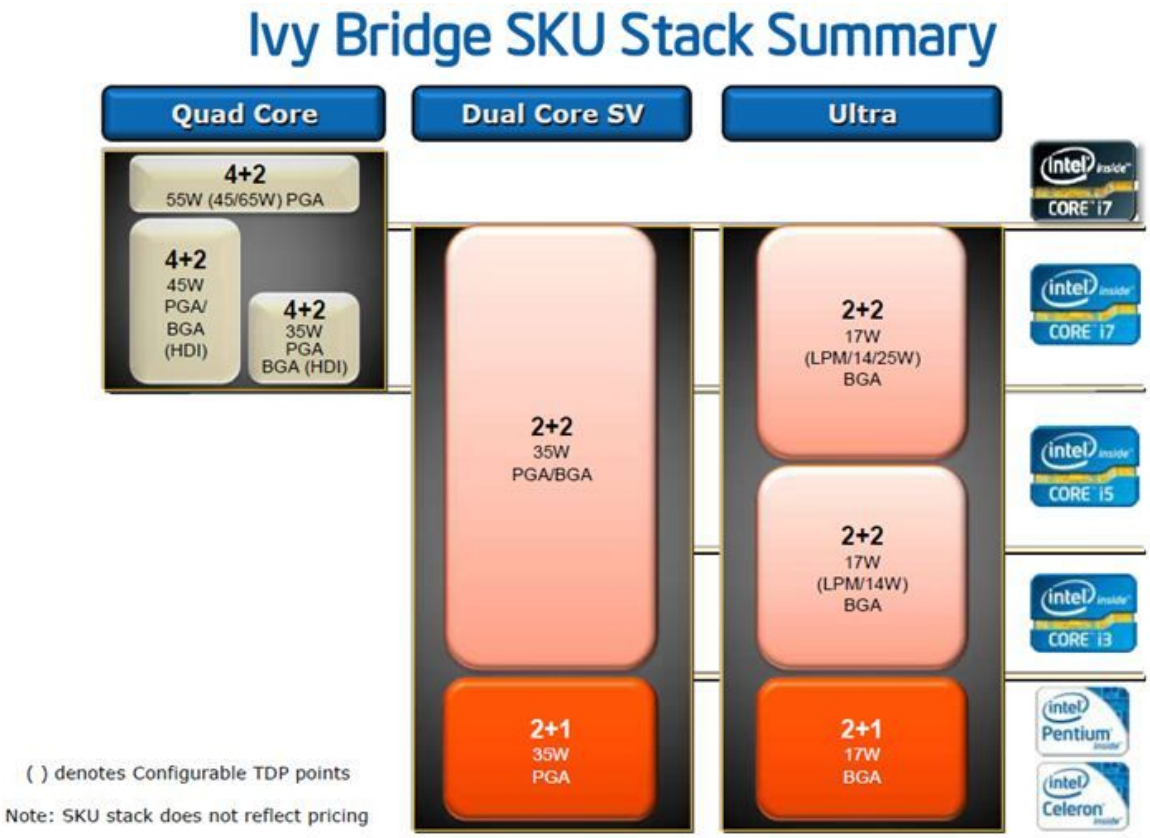

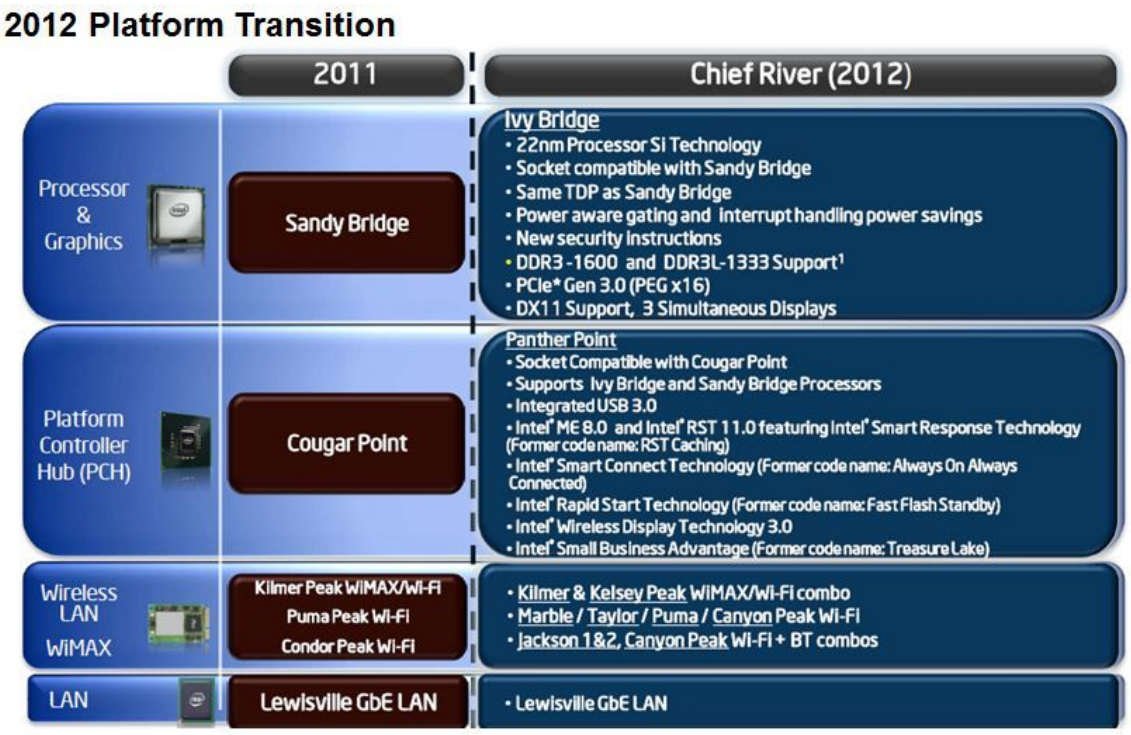
2012 Platform Transition
2011
Chief River (2012)
Processor & Graphics
Sandy Bridge
Ivy Bridge
• 22nm Processor SI Technology
• Socket compatible with Sandy Bridge
• Same TDP as Sandy Bridge
• Power aware gating and interrupt handling power savings
• New security instructions
• DDR3 -1600 and DDR3L-1333 Support1
• PCIe* Gen 3.0 (PEG x16)
• DX11 Support, 3 Simultaneous Displays
Platform Controller Hub (PCH)
Cougar Point
Panther Point
• Socket Compatible with Cougar Point
• Supports Ivy Bridge and Sandy Bridge Processors
• Integrated USB 3.0
• Intel® ME 8.0 and Intel® RST 11.0 featuring Intel® Smart Response Technology (Former code name: RST Caching)
• Intel® Smart Connect Technology (Former code name: Always On Always Connected)
• Intel® Rapid Start Technology (Former code name: Fast Flash Standby)
• Intel® Wireless Display Technology 3.0
• Intel® Small Business Advantage (Former code name: Treasure Lake)
Wireless LAN
WiMAX
Kilmer Peak WiMAX/Wi-Fi
Puma Peak Wi-Fi
Condor Peak Wi-Fi
• Kilmer & Kelsey Peak WiMAX/Wi-Fi combo
• Marble / Taylor / Puma / Canyon Peak Wi-Fi
• Jackson 1&2, Canyon Peak Wi-Fi + BT combos
LAN
Lewisville GbE LAN
• Lewisville GbE LAN

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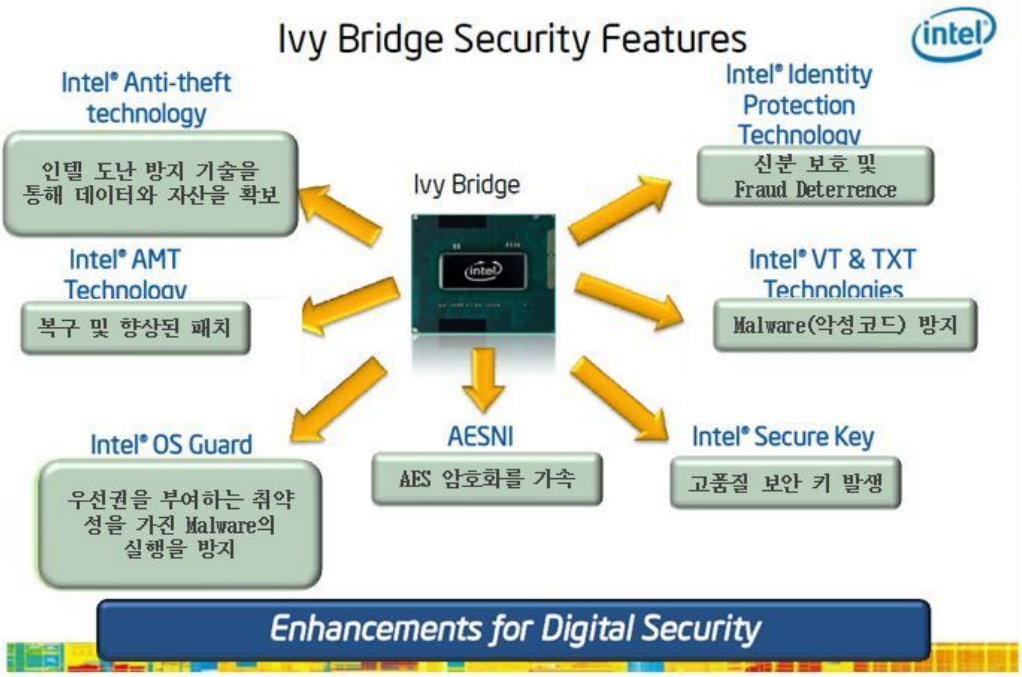
3nd Generation Intel® Core™ Processor Graphics

Ivy Bridge Graphics Highlights

- Continuing with 2 SKU graphics strategy
  – 6 EU (GT1) or 16 EU (GT2)
- 동시에 3개까지 Displays 지원
- 30% 3D enhancements for improved gaming**
  – DX11* and OpenGL3.1* support
- Sandy Bridge에서 빠른 미디어 성능 향상 **
  - 상세 기능 목록은 나중에 업데이트 됩니다.

Intel® Security Features



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Intel® Security Features

- **What is Intel® Identity Protection Technology 2012 (ITP) and How Does it Work?**
  - Intel's ITP implements the One Time Password (OTP) Identity Protection standard used in the industry today
  - Allows ISV's to embed OTP Token generators into the Intel® ME firmware
  - Used as a second factor of authentication on top of user name & password

- **What is Intel® Anti-Theft Technology 4.0 (AT) and How Does it Work?**
  - Intel® AT provides built-in capabilities to connect to a stolen or lost platform and automatically disable the system
    - Can disable the PC to prevent use when lost or stolen
    - Can still manage PCs even when HDD is encrypted or OS is contaminated
  - ***Intel® AT 4.0 adds 3G WWAN "kill pill"*** NEW
    - OOB communication between ME and 3G NIC (via SMBUS)
    - 3G NIC receives "kill pill" when powered and sends to Intel® ME Anti-Theft Service

Intel® Wireless Display Value Proposition

For Consumers

Wirelessly Connect Your Laptop to Your TV and Enjoy Media in Comfort

- **Share & Enjoy**: use a big screen HDTV to enjoy and share media with family and friends
- **Wireless**: quickly connect laptop to TV with standard Wi-Fi
- **Easy Set-up**: simple user interface makes it easy to connect– no remote controls required
- **Portable**: adapter is small and light, so solution can move with you

For Small Business

Wirelessly Connect your Laptop for Conference Room Collaboration

- **Share Content:** share a presentation quickly and easily on HDTV or digital projector
- **Wireless:** Based on 802.11 standards
- **Easy Set-up:** Collaborate with colleagues quickly via simple user interface – no passing the display cable or complex multi-display switching
- **Portable:** adapter is small and light for on the go productivity

No More Crowding Around a Laptop Screen to Share Content!

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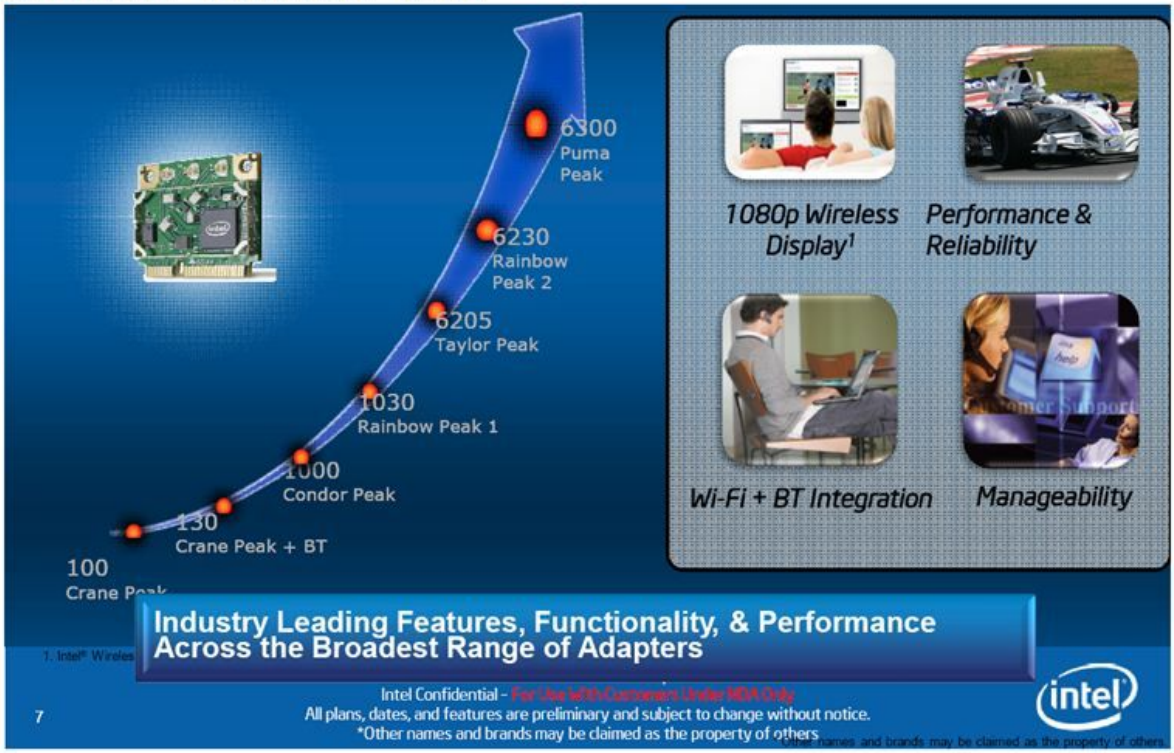
2011 Intel® Centrino® Wi-Fi



❑ Wlan Half Mini Card

Atheros WB225
Module : 802.11b/g/n 1x1 WLAN and BT 4.0 (BLE , BT3.0 +HS)
Formfactor : Mini Card half size
Chipset : Atheros AR5B225
Antenna : WLAN (1TX, 1RX), BT(1TX/RX)

TOP

Bottom

Intel Centrino Advanced-N 6235
Module : 802.11a/g/n 2x2 WLAN and BT4.0 (BLE , BT3.0 +HS)
Formfactor : Mini Card half size
Chipset : Intel Centrino Advanced-N 6235
Antenna : WLAN (2Tx/Rx)

TOP

Bottom

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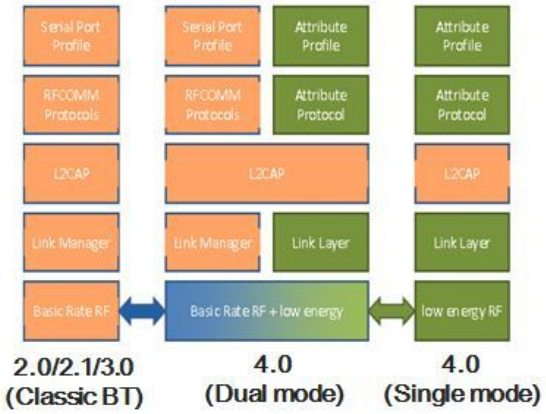
BT 4.0

- BT 4.0
  - PC Side: BLE Device in connection with the existing BT 3.0 features were added.
  - Device Side: This model is applied not only BT 3.0 but also BLE(Bluetooth Low Energy) only.
  - Device characteristics of BLE only
  - The controller is implemented as a simple structure. Chip/Device(Affordable price)
    - Low power consumption. The device's battery life increased dramatically.
      (For example) A number of Coin Cell can use the BT Keyboard with BLE Technology more than a year months)
    - The device with BLE only is not compatible with Classic Bluetooth(BT 3.0)

- Single Mode
  - BLE supports only
  - Simple structure, Affordable price,
    It is easy to apply.
  - Peripheral device is used.
  - Ex) BT KBD, MOUSE, Heart Rate Monitor
- Dual Mode
  - Classic BT and simultaneous support BLE.
  - HOST device uses
  - Ex) PC, Phone



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2.7. Software

	ItmName
Driver	Heci(Chief River,SWDESC)_Package 8.1.0.1248 for Win8(8.1.0.1248)
	Touchpad- Elan - (11.7.2.1_WHQL)
	Namuga 1.3M(HD) Camera 6.5x56x3.1T FPC (SC-13HDL11431N)(-)
	Namuga 1.3M(HD) Camera 6.5x56x3.1T FPC LED VE (SC-13HDL12131N)(-)
	QCA Bluetooth Driver Win8- (8.0.0.206)
	QCA WLAN Driver Win8- (10.0.0.75 WHQL)
	Intel Bluetooth Driver (Win8)(2.5_PV2)
	Intel WLAN Driver (e64)(15.5.0.42 PV HF1 BTHS MWT)
	ExpressCache (for x64)(1.0.92.0)
	Win 8 64bit Professional(v.9200)
	Win 8 64bit Standard(v.9200)
	Intel IvyBridge Windows8 GFX driver - 64bit(9.17.10.2817 (WHQL_Generic))
	Realtek ALC26X Win8/Win7 Snd Drv(6.0.1.6699Logo)
	Intel Rapid Start Technology Driver for Windows 8(2.1.0.1002)
	Win8-Realtek LAN Driver[Gigabit](8.2.612.2012)
	iRST Win8 for NP(11.5.0.1207PV-W8Inst)
	Lotus_Jones_TSP_SS Enable(1.0.0.2)
	Infineon TPM Utility (Win8)(4.3.0.3137)
	Airplane Mode Control Driver(Win8, 64bit)(6.2.8400.4218)
	Intel Wireless Display (3.5.34.0 PV)
Application	Kindle for Metro (Samsung)
	Shark Dash for Metro
	Photo Editor
	MusicHub
	FamilyStory
	ChatOn
	Birzzle for Metro
	StumbleUpon for Metro
	Netflix
	Tuba.FM for Metro
	Onet.news for Metro
	MS_Mahjong
	BugsMusic
	WildTangent Games for Metro
	CineTrailer for Metro
	ilMeteo for Metro

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	ItmName
Application	RepubblicaTV for Metro
	PagineGialle for Metro
	Rai.TV for Metro
	Merriam-Webster Dictionary
	MusixMatch
	TVN Player
	Le Monde
	Tele7
	Allo Cine
	Kiosque Relay
	Financial Times
	Parcel Genie
	MS_Adera
	MS_Taptiles
	National Rail
	Fresh Paint
	Metro_Layout_for_NotePC_Intel_MS_Featured_Only
	MS_Pinball_FX2
	Dailymotion
	ChatON(Canada)
	Music Maker Jam
	Windows Reader Metro Pinning
	SkyNews
	Norton Studio
	News Republic
	Jamie Oliver's Recipe for Metro
	Skype(Metro) for Win8
	Match'A' Shape for Metro
	S Player for Win8 Metro
	S Camera for Win8 Metro
	S Gallery for Win8 Metro
	Evernote Metro for Win8
	Accessory Store
	IE Default HomePage(MSN)_64bit (Jumpstart'12)
	SkyNews
	Adobe Reader for Win 8
	Sogou 6.2 for Win8

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Software — Previous/New

※ For more information, product descriptions and installation training manuals refer to Chap.1

Development Stage Information

※ Consultation of development stage (Known Issue&spec)

Please refer that [Consulting Script]->[Consultation].

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2.8. System Setup (Bios Setup)

[PHOENIX]

SysInfo	Advanced	Security	Boot	Exit	Item Specific Help
System Time		[19:00:00]			<Tap>,<Shift-Tap>, or <Enter> selects field.
System Date		[04/19/2010]			
SATA Port 1		Samsung HM641JI			
SATA Port 2		MATSHITADVD-RAM UJ8A7AS			
CPU Vendor		Intel (R)			
CPU Type		Core(TM) i5-2520M CPU			
CPU Speed		2.50 GHz			
CPU VT (VT -x)		Supported			
Total Memory		4096MB			
Slot1 Memory		4096MB			
Slot2 Memory		Not Installed			
BIOS Version		03FD			
MICOM Version		00FD			
※ Express Cache (iSSD) can be found in the device manager.					

F1 Help	↑↓ Select Item	F5/F6 Change Values		F9 Setup Defaults
ESC Exit	←→ Select Menu	Enter Select ▸ Sub-Menu		F10 Save and Exit

- **SATA Port 1**
  => HDD model name is displayed in this item for SATA Port 1.
- **SATA Port 2**
  => ODD model name is displayed in this item for SATA Port 2.
  . Express Cache(iSSD) is possible to check in Device Manager
  . iSSD makes improval basic operating system speed
- **Total Memory**
  => Total memory size of the system.
- **Slot1 Memory**
  => Memory size of the slot 1
- **Slot2 Memory**
  => Memory size of the slot 2

<Lotus> P4 16GB

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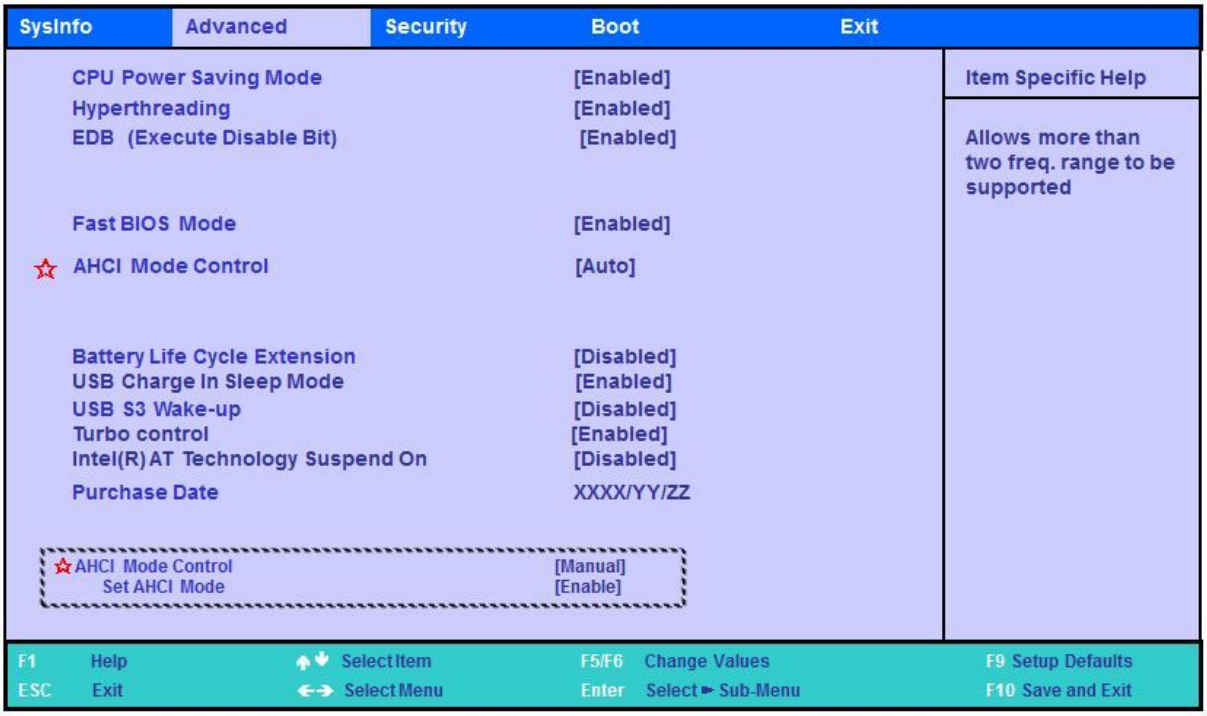

- CPU Power Saving Mode
  => 'Enabled' will decrease system power consumption.
- Hyperthreading
  => This selects whether Intel® CPU performance will improve.
- EDB (Execute Disable Bit)
  => supports the Data Execution Prevention (DEP) feature. DEP is a set of H/W & S/W technologies that perform additional checks on memory to help prevent malicious code from running on a system.
- Fast BIOS Mode

● Fast Bios Mode

- Fast BIOS Mode is technology to reduce the boot up time by skipping the USB check in the POST stage.
  → DOS mode booting is not supported. (Basic ODD, USB memory devices, etc.)
- The factory default setting is [Disable]. When the purchase date is registered, the setting is automatically changed to [Enable]. Once the setting is changed to [Enable], the default setting in the CMOS is changed to [Enable].

◆ Problem: The system does not boot from a standard ODD or USB device (e.g. CD-ROM drive, memory device, etc).
(All models with the Fast BIOS Mode feature have this problem.)

◆ Symptom

- The system cannot boot from a standard ODD or USB device (e.g. CD-ROM drive, memory device, etc).
- When the system boots from a brand new HDD (with a clean MBR), the system reboots indefinitely in the POST stage.

◆ Cause

- The system boots up faster by skipping the USB check operation.

◆ Solution

- The problem is resolved if [Fast BIOS Mode] is set to disabled in the CMOS Setup menu.

※ The factory default setting is [Disable]. When the purchase date is registered, the setting is changed to [Enable] automatically.

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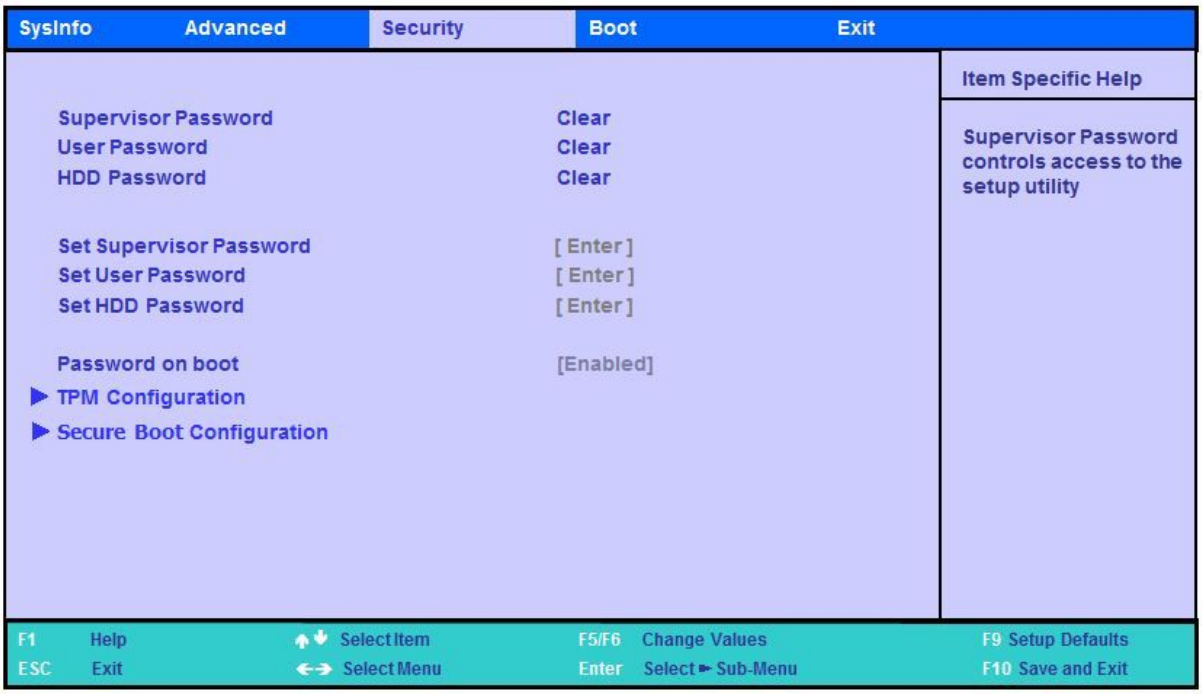
- AHCI Mode Control
  => Select AHCI Mode option.
  => Select [Auto] : In accordance Master, AHCI mode changed automatically AHCI/IDE.
  => Select [Manual] : AHCI Mode changed by user to AHCI/IDE Mode.
  => Samsung produce Default AHCI enabled Master. Turbo control (default setup was Enabled)
- Battery Life Cycle Extension
  => 'Enabled' means that the system will charge the battery up to 80% for extending the battery life cycle.
  => 'Disabled' means that the system will charge the battery up to 100%
- USB Charge In Sleep Mode
  => 'Enabled' means that the system supports the USB charge feature at the port which has the special icon.in sleep mode
  => 'Disabled' means that the system doesn't support the USB charge feature in the sleep mode.
- USB S3 Wake-up
  => Select Enabled to support that system can be waked up from ACPI S3 state by USB activities.
  => Select Disabled not to use USB wake-up capability from ACPI S3 state.
- Turbo control (default setup was Enabled) 04XKM BIOS
  => =>"Enabled" Support Over Clocking to the specific temperature.
  To minimize generation of heat Over Clocking not support when over the specific temperature point.
  "Disabled" Support Over Clocking when over the specific temperature point
  cf)Can use High performance when select Disaled Mode.
  But System can be more hot than enabled Mode
- INTEL (R) AT Technology Suspend ON
  =>Item added to Ultrabook requirement
  =>"Disabled" function is available, AT. "Enabled" is not the AT function.
- Purchase Date
  => Purchased date is displayed after 10 times boot.



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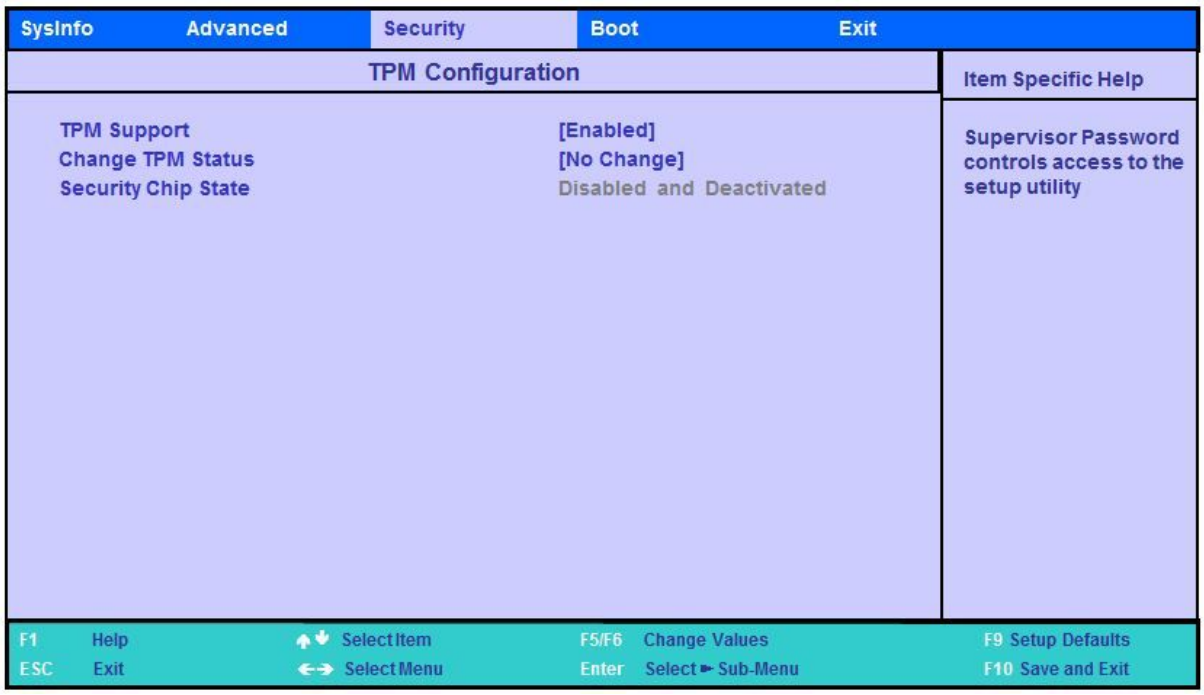

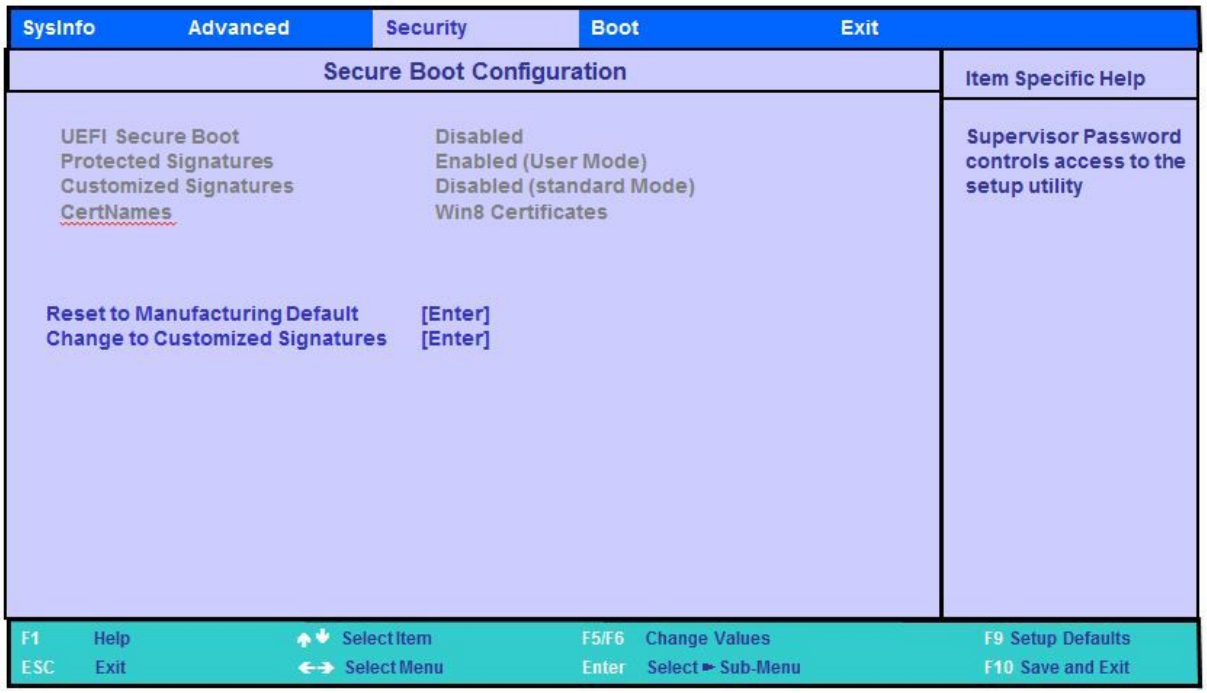

- **Set Supervisor Password**
  =>Supervisor Password controls access to the setup utility.
- **Set User Password**
  => User Password controls access to the system at boot
- **Set HDD Password**
  => After saving the setting, the system must be powered OFF and ON for the password to be set as Enabled or Disabled
- **Password on Boot**
  => Password On Boot
- **TPM Configuration**
  => Enter the TPM Setting Mode

TPM

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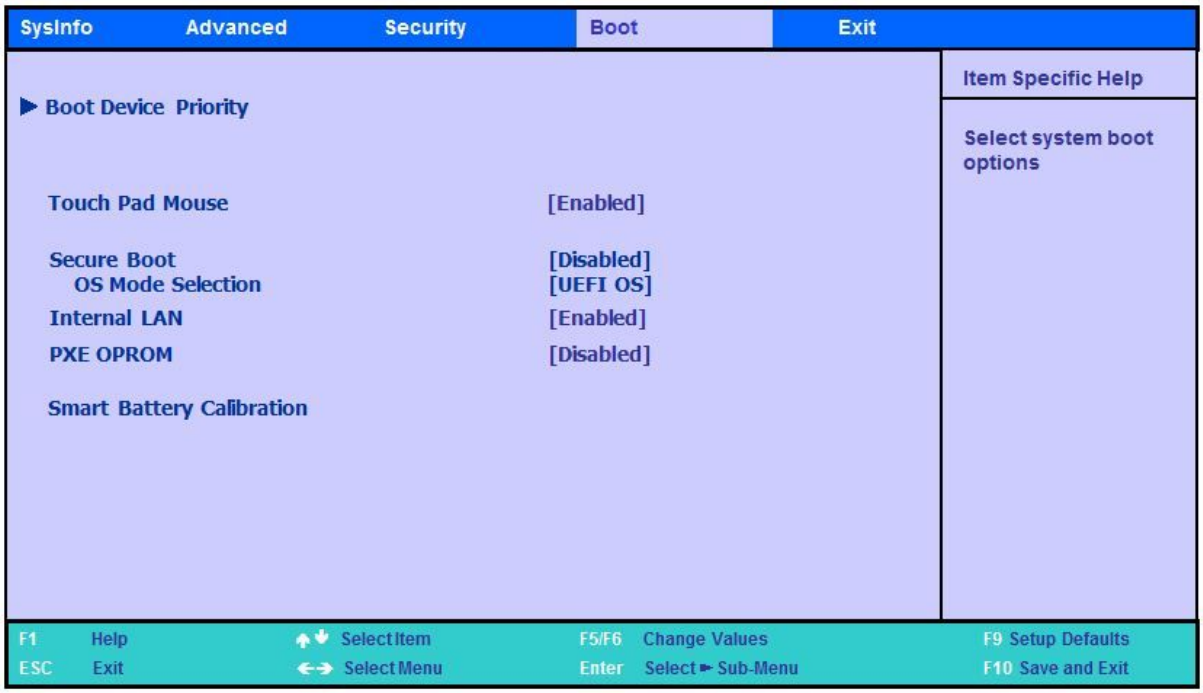
- TPM Support
  => [Enabled] : Using the TPM security device
- Change TPM Status
  => [No Change] : TPM chip will remain current.
  [Clear] : Initialize TPM chip data.
  [Enable and Activate] : Initialize TPM chip data. → Activate and use the TPM security chip.
  [Disable and Deactivate] : Do not use the TPM device.
- Security Chip State
  => Security Chip State

- Reset to Manufacturing Default [Enter]
  -> secure Boot Variable set as an initial Default .
- Change to Customized Signatures [Enter]
  -> Change Signatures(Change Platform → Setup Mode , secure boot Disabled Conversion)
  -> Existing PK value is cleared and the new Signatures can be registered.
  -> Secure boot automatically be disable.



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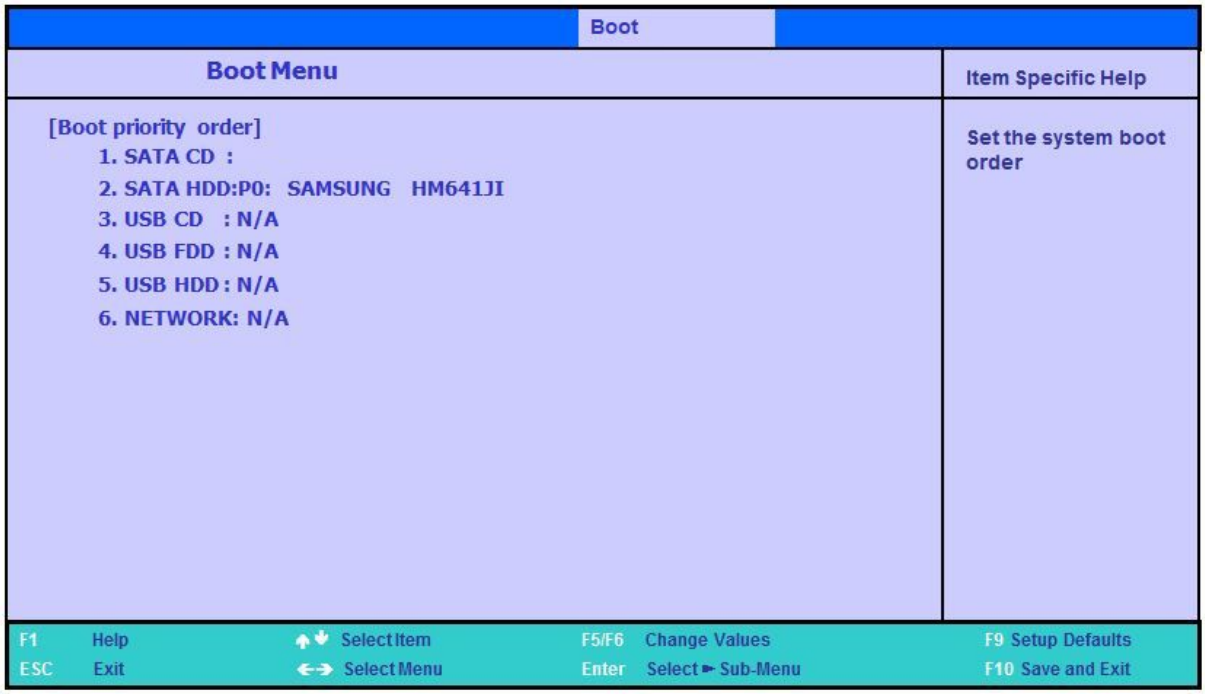

- Boot Device Priority
  => Select system boot options.
- Touch Pad Mouse
  => 'Disabled' prevents installed Touch Pad mouse from functioning, but frees up IRQ 12.
  'Enabled' forces the Touch Pad mouse to be enabled.
- Internal LAN
  => Setting item to "Enabled" will allow the internal LAN to operate correctly.
  Setting item to "Disabled" will remove the internal LAN from PCI Config space.
- PXE OPROM
  => 'Enabled' means that PXE network boot function is loaded, so the user can make the system PXE boot by changing Boot Device Priority.
  => 'Disabled' means that the system doesn't support PXE network boot function.
- Secure Boot
  => Secure Boot feature is enabled.
  Win8 default setting. GPT Partition is used by default, CSMless(Do not support DOS)
  feature applies.
  The ability to encrypt the BIOS using the KEY
  * is not recommended to modify and change the key.
- OS Mode Selection
  => Secure Boot [Disable] is set to activate when the item.
  Default value is [Enabled]. so that normally it is disabled.
  UEFI OS / UEFI and Legacy OS / CSM OS that item
  When set to UEFI and Legacy OS / CSM OS items, WIN7 and the previous version of the OS or DOS boot can be
- UEFI Boot Support
  => Choose Only Legacy OS Boot or OS Boot applying EFI first & Legacy OS Boot second
  EFI(Extensible Firmware Interface) : OS, BIOS firmware Interface protocol in Intel based Platform. This function needs OS which is applying EFI and suitable EFI Protocol for OS. But, in present time applied OS and EFI are not exist.

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- **Exit Saving changes**
  => Reset the system after saving the changes.
- **Exit Discarding Changes**
  => Reset the system setup without saving any changes.
- **Load Setup Defaults**
  => Load Default setting.
- **Discard Changes**
  => Discard Changes made so far to any of the setup options.
- **Save Changes**
  => Save Changes made so far to any of the setup options.

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2.9. HW & Option Materials

Basic Item

Basic H/W
(inner Cell Type Battery)

Computer

AC Adapter

Power Cable

	image	item	Code	Quantity	Ver
ACCESSORIES		Adapter 40W	BA44-00279A	1	1.0
		Power Cord	3903-000444	1	1.0
		Quick Guide	TBD	1	1.0

Power Plug		
3903-000444	DT,EU/KR,CP3,IEC320 C5,250/250V,16/2,5A,BLK,1000mm,N,H03VV-F 3x0,75mm^2,CEE/KTL,N,N,N,N,N,N,139g	CBF-POWER CORD

Adapter		
BA44-00279A(40W)	PA-1400-14,AD-4019P,19VDC,2.1A,-,100-240VAC,50-60Hz,- ,40W,AC/DC,0to45,L92,5*W38,5*H27,5mm,DC Jack	ADAPTOR

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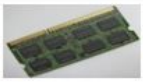
Optional

***Option Component**

540U3C the following optional components to add or replace.
The type of component can be added later.

HDD
SSD(mSATA)
Memory
LCD
TSP
VGA Adapter
WLAN

HDD(SATA2)		
BA59-03210A	HTS545050A7E380	**500GB (5.4KR SATA) , 7mmH**
mSATA SSD(SATA3)		
BA59-03232C	SDSA5DK-128G-1004	**128GB(SATA)**
MEMORY * 8GB 추후 도입예정		
		
1105-002376	DDR3 1600MHz 28nm,4GByte	M471B5273EB0-CK0
1105-002328	DDR3 2G 1600MHz,2GByte	M471B5773DH0-CK0

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LCD		
BA59-02952A	LTN133AT23-8	LCD PANEL-13.3 HD

TSP		
BA59-03592A	-	13.3 TSP

VGA Adapter (Factory Option)		
BA39-01189A	L100mm,34mm,-,-,BLACK,D-SUB,-,-,-,yes,-,CB861A-4000-102	D SUB CABLE-M/VGA_DONGLE

Combo. Module (Jackson Peak2)

Intel 2x2 WLAN+BT4.0

Wireless LAN	Jackson Peak2 2x2 Combo
Module	802.11a/g/n 2x2 WLAN and BT4.0 (BLE , BT3.0 +HS)
Type	WLAN(PCI-E), BT(USB2.0)
Chipset	Intel Centrino Advanced-N 6235
Max. Link Speed	300Mbps (Link Speed is only standard value, Actually value will decided by each environmant)
Antenna	2 Antenna Support : WLAN (2Tx/Rx)

Intel 1x1 WLAN+BT4.0

Wireless LAN	Atheros WB225
Module	802.11b/g/n 1x1 WLAN and BT 4.0 (BLE , BT3.0 +HS)
Type	WLAN(PCI-E), BT(USB2.0)
Chipset	AR9485(WLAN) + AR3012(Bluetooth)
Max. Link Speed	150Mbps (Link Speed is only standard value, Actually value will decided by each environmant)
Antenna	1 Antenna Support : WLAN (1TX, 1RX), BT(1TX/RX)

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3. Desassembly and Reassembly

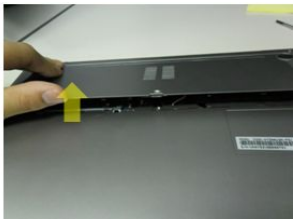
3.1. MainSystem

CAUTION

※ Make sure to separate the AC adapter before disassembling the system.

1. 1.memory door disassembling

- After removing 1 screw up to the remove the memory door.



< Picture of system which remove memory door. >

2. HDD disassembling

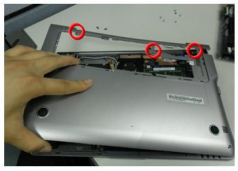
Remove 4 (Red circle) Screw, and take out FPC cable from the connector.

3. mini SSD card (mSATA)

At first disassemble screw(red circle) change mini SSD card module

4. Cover disassembling

- Remove 8 screws for removing Bottom.



- 3 Red Circle : Careful! The hook can be broken.

< Picture of system which removed Bottom >

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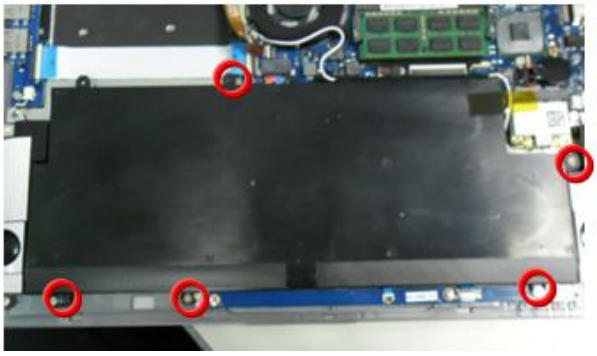
5. Battery disassembling

-Remove 5 (Red circle) Screw, and take out Battery Jack from the connector.

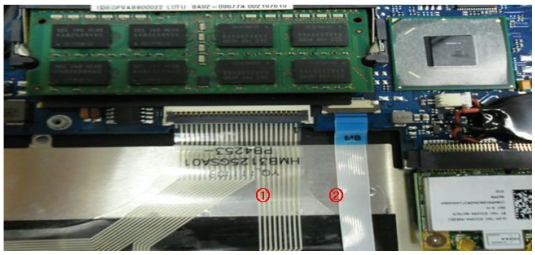


6. WLAN disassembling

-After removing 1 screw (Red circle) up to the remove the Wlan.

7. KBD Membrain TP SUB FFC disassembling

- KBD Membrain TP SUB FFC is separated by pulling to the top.

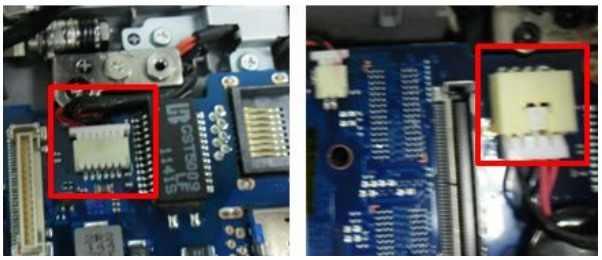


8. LCD Cable and TSP cable disassembling

- LCD/TSP Cable(Red Square) Pull and remove it.

9. DC jack cable disassembling

- DC jack cable(Red Square) Pull and remove it.



10. Memory disassembling

- Loosen both sides of the hook to remove the memory.

11. Fan disassembling

After removing 2 screws, remove the 3 screws in Sink outlet.

12. Main Board disassembling

– After removing 2 screw up to the remove the Main board

- cf) Yellow circle for Lotus-R not Lotus-TSP

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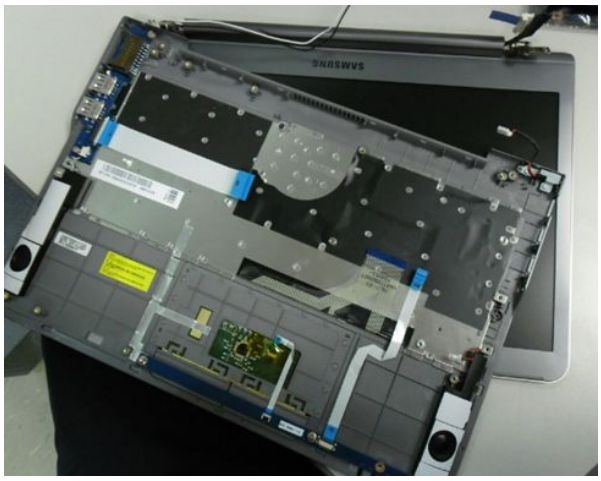
13. < After full decomposition appearance. >



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3.2. LCD

CAUTION

12.LCD Assy can’t disassemble

- TSP do not function when LCD Assydisassembled.

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4. Trouble shooting

4.1. General spec

Tools used for repairing the product

- System Diagnostics Disk
- MS-DOS Booting Disk
- System Diagnostics Card
- Screwdrivers (+, —)
- Tweezers
- Multi-meter
- Oscilloscope / Logic Analyzer

Replace Units (FRU: Field Replaceable Unit)

- DDR3 RAM Module (1 slot)
- 7mmH SATA 2.0 HDD
- Broadcom Wireless LAN + BT Combo Module / Intel Wireless LAN + BT Combo Module
- Adapter
- System Fan / Heatsink
- Touch Pad
- Battery
- Speaker
- Main Board / PWR Sub Board / 3-in-1 Sub Board / USB 2.0 Sub Board
- Harness Cable
- Harness Cable- DC in Cable, SATA HDD FPC, Main-to-PWR SubB'dFFC , USB2.0 FFC, 3-in-1 FFC, LCD Cable, Touchpad FFC

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4.2. Debugging Flow Chart

Debugging Flow of our company computer product does same as between product universally.

Refer to attachment Debugging Flowchart more content.

※Training manual how to use the side of the fault diagnosis please refer.

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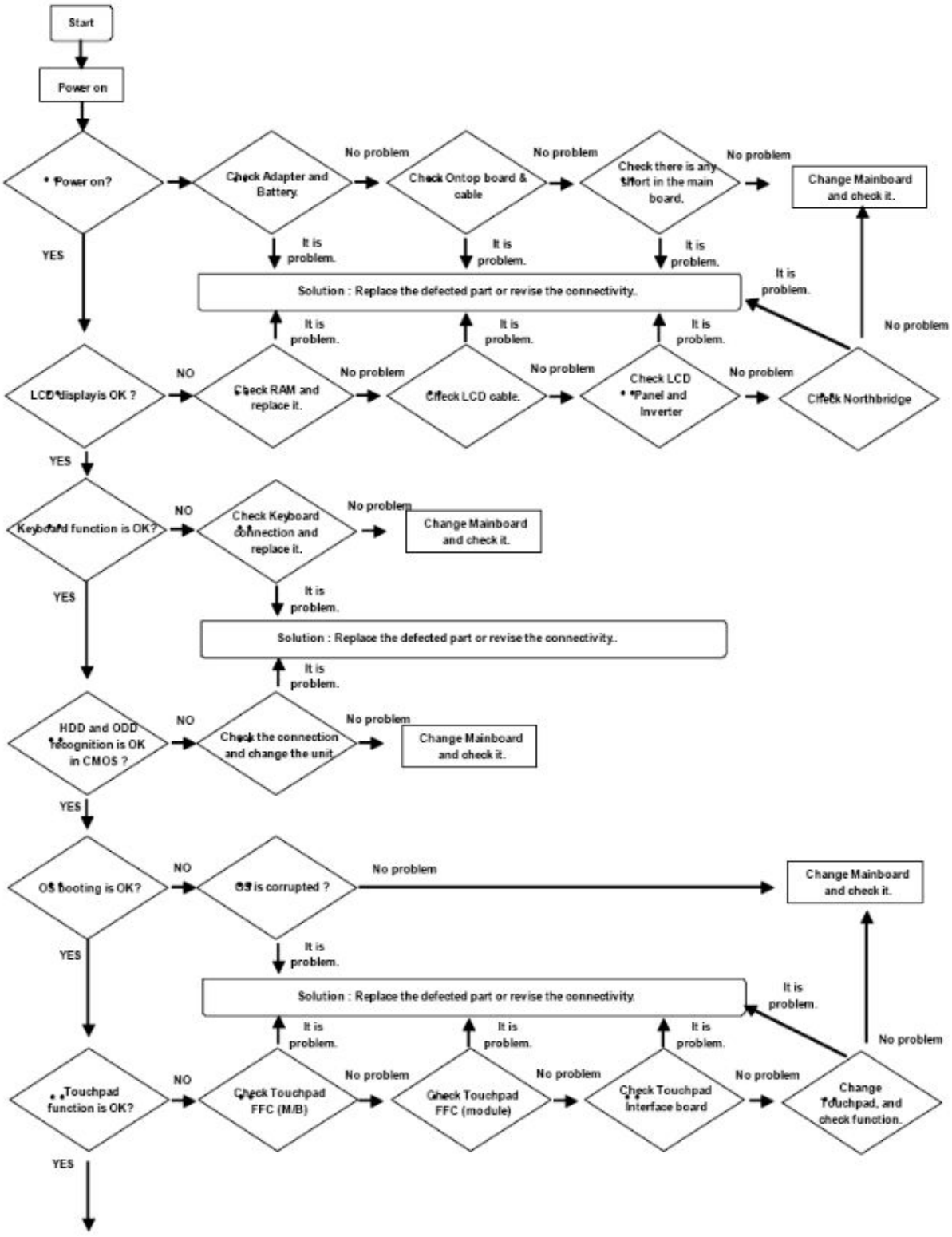
2) Debugging Flow Chart



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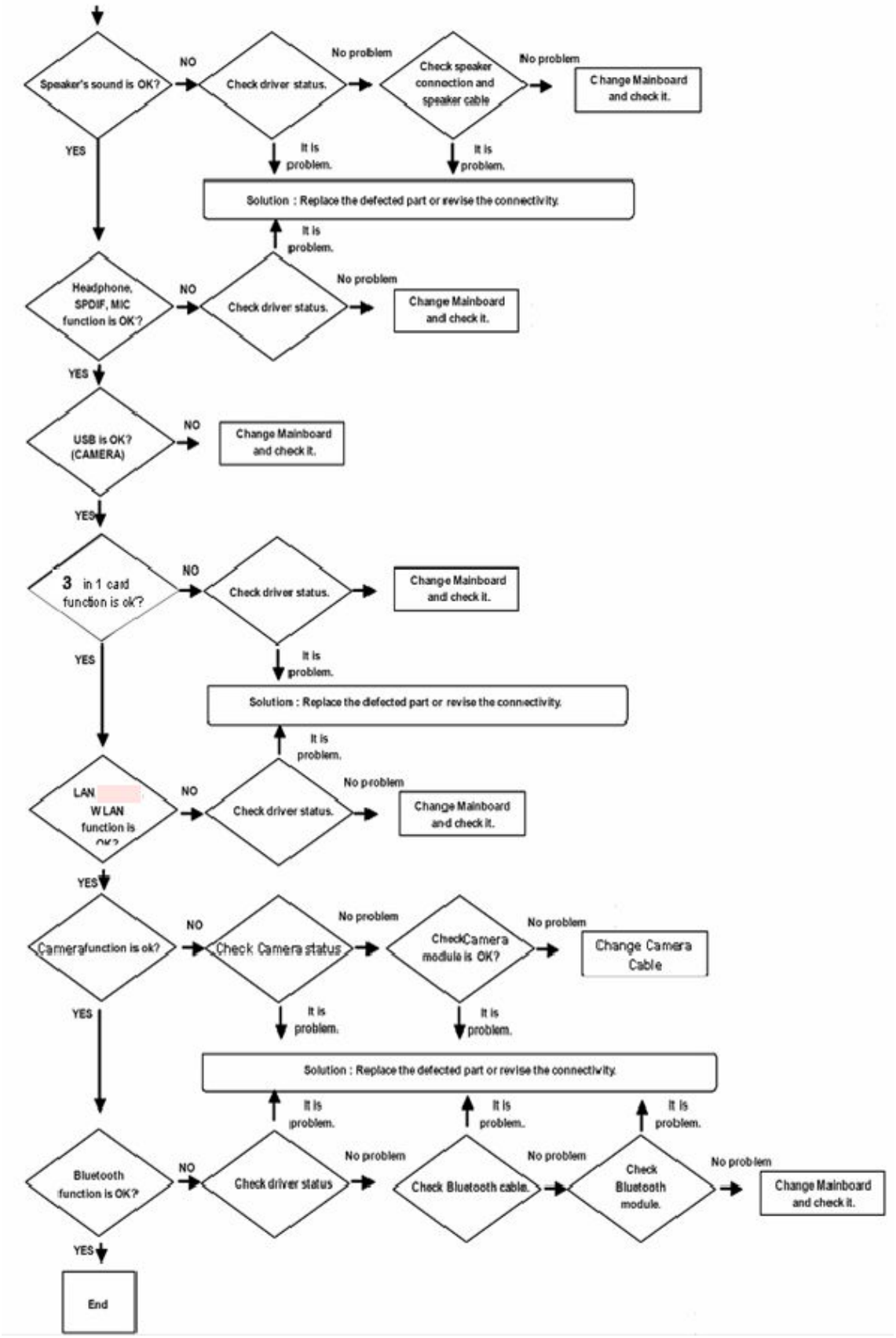

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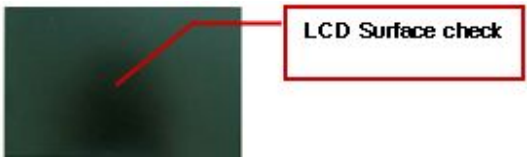
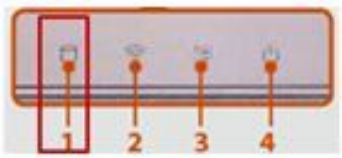
4.3. Hardware Troubleshooting

4.3.1. LCD

#1. The screen is dark or the colors of the screen are distorted.		
1	Check the connection status - LCD Module LCD Cable - LCD Cable and Main board LCD Connector →Connect Cable and Connector perfectly	
2	Replace the LCD Ass'y	Defectiveness confirmation
3	Check if there is a part of the LCD that is bent or broken due to impact →Replace the LCD Ass'y	

#2. No picture appears on the screen.		
1	Check the connection status - LCD Module LCD Cable - LCD Cable and Main board LCD Connector →Connect Cable and Connector perfectly →LCD Ass'y replace	
2	Check if the System LED of the main board is blinking	
3	Check if the memory module is out of order	Re-fixation or Replacement other Memory Card
4	Check if the Power button can be normally pressed.	Check operating or not

#3. The LCD blinks while the system is in operation.		
1	Check if there is a magnetic body near the touch pad button or the system or check if there is an exterior defect to the LCD	
2	Replace the LCD Ass'y	Defectiveness confirmation

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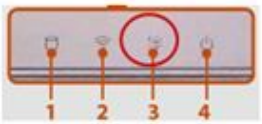
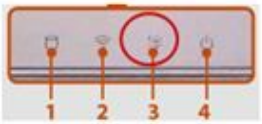
4.3.2. Main System

#1. The system is not turned on.		
1	Check if the AC adapter LED is lit and if the adapter is properly connected to the system.	Check the adapter LED. 
2	If the AC adapter is not connected, check the charge status of the battery. Even if the battery is charged, if the remaining battery charge is too low, the system may not be turned on.	Inner Cell Battery type Can't check external meter 
3	Check if there are any alien substances in the Power switch. if have, change the LED	
4	Replace Main Board	Check operating or not.

#2. the system does not boot or immediately turns off after being turned on		
1	Since this may be a short circuit in the system.	Disconnect the power immediately, disassemble the system and check if there are any conducting alien objects such as a screw inside.
2	Check the connection status between the CPU and the RHE.	
3	Replace the memory module.	*Check if it is out of order.
4	RTC Reset.	*Check if it is out of order.
5	Replace Main Board.	*Check if it is out of order.

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#3. There is no sound from the speaker. (Insert the figure of the audio jacks so that the reader can check via the figure.)		
1	Check if the sound is muted after booting up Windows. →Fn + F6 (Mute cancellation) →Fn Lock enable + F6	
2	Control panel confirmation. →Speaker Setting.	
3	Check the connection status of the speaker cable and check if the speaker is out of order.	
4	Check if there is a magnetic object near the speaker.	
5	Replace Main Board.	*Check if it is out of order.

#4. I cannot hear sound through the headphones.		
1	Check if the sound is muted after booting up Windows. →Fn + F6 (Mute cancellation) →Fn Lock enable + F6	
2	Control panel confirmation . →Speaker Setting.	
3	Turn the volume up. →Fn key volume adjustment.	
4	Check the Headphone jack.	
5	Replace Main Board.	*Check if it is out of order

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#5. external/Internal microphone does not work normally.		
1	Check the audio driver settings and change them if necessary.	
2	Check the connection status of the MIC connector and check if the speaker is out of order.	*Check if it is out of order.
3	Check the Mic jack.	
4	Replace Main Board.	*Check if it is out of order.

#6. HDMI port does not work normally.		
1	System manager confirmation . (Video / Sound / Controller confirmation) →HDMI driver Re-install.	
2	Check the Display Manager work normally. →Display Manager program Re-install.	
3	Check the Control panel . →Check HDMI section enable.	
4	Replace Main Board.	*Check if it is out of order.

#7. The HDD is not recognized.		
1	Check the connection status of the HDD connector. Fix HDD, check whether the system can be found. if not, change the connector on the motherboard and check again.	
2	If the 'Operating system not found' message appears during the booting process even though the HDD is recognized by CMOS, the operating system of the HDD may be corrupted or the SSD is out of order.	Format the HDD and reinstall the operating System. Replace the HDD with a new one.

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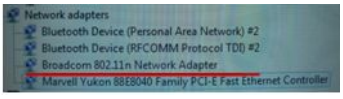
#8. Touch Pad does not work normally.		
1	Check the connection status of Touch Pad FFC.	
2	Check the connection status of Touch Pad I/F B'D.	
3	Check the connection status of Touch Pad Module.	
4	Replace Touch-Pad Module.	

#9. Battery problems.		
1	Check if the AC adapter →Replace suitable Adapter (40W/60W)	
2	Confirms a battery defective yes or no.	*Battery Check reference.
3	Replace Main board	*Check if it is out of order.

#10. Camera does not work normally.		
1	Check the driver status of Camera (Check the system manager)	
2	Check the connection status of camera cable between Camera module	
3	Replace Camera module	
4	Replace Main Board	*Check if it is out of order.

#11. WLAN does not work normally.		
1	Check the damage status of WLAN Cable →Replace WLAN Cable	
2	Check the driver status of WLAN →Re-Install WLAN driver.	
3	Check the damage status of WLAN Jack →Replace WLAN module.	
4	Replace Main Board.	*Check if it is out of order.

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#12. The Fan does not work normally.		
1	Check the system by using SAFC(Samsung Advanced Fan Control)program.	*Tool Program referance
2	Check the connection status of Heat sink è Screw fixation 7EA	
3	Check the connection status of FAN	
4	Replace FAN	*Check if it is out of order.
5	Replace Main Board.	*Check if it is out of order.

#13. TSP function is abnormal , or does not work.		
1	Try Calibrate TSP again in control panel	
2	Make sure TSP cable is connected	
3	Change LCD Assy	

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4.4. Diagnosis application

WinDiag4

※Training manual how to use the side of the fault diagnosis please refer.

1) WinDiag4 is a Diagnostic tool that tests overall computer's H/Ws and functions for Windows 7.

2) Precondition : UAC(User Account Control) should be disabled.

3) Installation : When you double-click SvcDiag.bat file, this program will be installed in C:\WinDiag4.

After installation, WinDiag4 will automatically start testing the system.

4) Uninstallation : After terminating the program, Just delete C:\WinDiag4 folder.

①
②
Status (2/7) [12/28]
Memory Free Size 0 6 0 0.11 06 n/a 015
Drive C: free sp... 0 6 0 0.08 06 n/a 016
CPU Temperature 0 2 0 0.02 01 n/a 017
FAN Status 1 1 0 1.51 02 n/a 018
HDD 0 Tempera... 0 2 0 0.34 n/a 019
Battery Status 11 11 0 0.04 02 n/a 020
Heating System 0 0 0 0.0 02 n/a 021

: Group Info

It displays Group Item Name and Test Count. If there is any FAIL or FAULT in the Group Item, the color of title will be changed to Red.

: Test Item

It displays Test items included in this Group. If there is any FAIL or FAULT in this test item, the color of the test item will be changed to Red.

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Pyxis

※Training manual how to use the side of the fault diagnosis please refer.

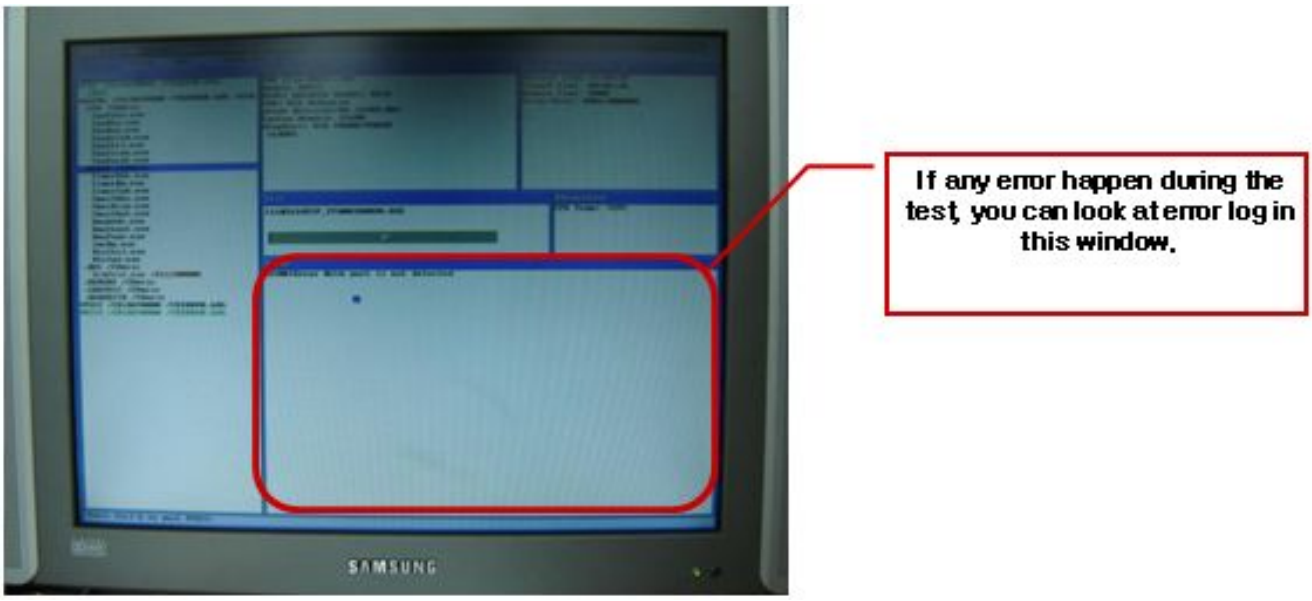
1) Pyxis is a software that diagnose computer's H/W components in DOS environment.

2) How to use Pyxis

- First, make Dos bootable USB memory or CD.

- Copy all released files to the Dos bootable device.

- After you boot using the Dos bootable device, Select the menu that you want to execute.



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4.5. Bios & Micom Update

Set-up Method

1) DOS Mode Update
   a) Make a Dos booting disk -> Copy Packing file to Disk -> boot from DOS disk ->
   b) BIOS update: C:\>phlash16 xxx.wph/c /bbl
   c) MICOM update : C:\>up111m XXXX.bin
   d) Packing fie : C:\>XXXX.exe /s /c

   (XXXX.exe is the packing file merging BIOS and MICOM -> ABXX.exe)

   Inform to customer that it is not recommend to update BIOS and Micom in DOS mode.
   If not, it can cause fatal error.

2) update in the Windows
   Windows boot -> Run Samsung update plus -> check update profile -> Click ‘BIOS update’

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4.6. RTC Reset

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4.7. Battery Use time

1) Generally, the battery usage time in advertisements by notebook manufacturers refers to the maximum battery use time. Since the system specifications and the usage environment may differ, the user's battery usage time may differ from the advertisement even if there is no problem with the system.

2) Conditions for the company's maximum battery use time

   - Minimum LCD brightness, base system, the wireless LAN R/F is turned off, BatteryManager-Maximum Battery Mode.
   - Measuring Tool: BatteryMark v.4.0.1

3) If a customer complains about the battery usage time, let them know that the battery usage time may differ depending on the model specifications and the usage environment and recommend the following usage environment for longer battery time.

   - Use the company's power-saving program, BatteryManager, and set BatteryManager to Maximum Battery Mode.
   - LCD brightness: Set to the minimum level as long as the user does not experience inconvenience.
   - Disable unnecessary devices : Turn the wireless LAN R/F switch off and disable USB devices (DMB, fingerprint recognition and Bluetooth)

※ Please Refer to the Training manual chapter4. Trouble Shooting.

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4.8. CPU FAN Control

Checking CPU FAN

1) Check thermal Fan locked well
2) Check FAN cable plugged well
3) change FAN.

Turbo boost setting (Chief River)		
PL1	TDP	0
PL2	125 * TDP	0
Tau	28	28
T_cc	94	11

CPU SPEED		Address (Hexa)	RPM	Noise	(for CPU temperature) CPU_Sensor(on/off)	(for GPU temperature) GPU_Sensor(on/off)	Speed step & throttling
1 단계	OFF	FF	-		-	-	NORMAL
	Low	60	2560		40/35		
	Middle1	57	2825		55/50		
	Middle 2	4D	3192		60/55		
	Middle 3	40	3840		65/60		
	Middle 4	38	4389		72/62		
	High	33	4819		82/77		
Turbo Off					73/65		
2 단계	High	33	4819		100/90		Lowest Speed step
		OS Throttling			102		Additional 50% throttling
		OS Shutdown			104		
		Dos Throttling			90/85		Addtional 50% throttling
		Shutdown			105		

2. 기본모드(Battery)

CPU SPEED		Address (Hexa)	RPM	Noise	(for CPU temperature) CPU_Sensor(on/off)	(for GPU temperature) GPU_Sensor(on/off)	Speed step & throttling
1 단계	OFF	FF	-		-	-	Turbo Off
	Low	60	2560		55/45		
	Middle1	57	2825		65/55		
	Middle 2	4D	3192		70/65		
	Middle 3	40	3840		75/70		
	Middle 4	38	4389		80/75		
	High	33	4819		85/80		
2 단계	High	33	4819		100/90		Lowest Speed step
		OS Throttling			102		Additional 50% throttling
		OS Shutdown			104		
		Dos Throttling			90/85		Addtional 50% throttling
		Shutdown			105		

3. 저소음 Mode

(1) 저소음 모드(Auto_on/off)

CPU SPEED		Address (Hexa)	RPM	Noise	(for CPU temperature) CPU_Sensor(on/off)	(for GPU temperature) GPU_Sensor(on/off)	Speed step & throttling
2 단계	OFF	FF	-		-	-	Speed step Low
	Low	60	2560		55/45		
	Middle1	57	2825		65/55		
	Middle 2	4D	3192		70/65		
	Middle 3	40	3840		75/70		
	Middle 4	38	4389		80/75		
	High	33	4819		85/80		
		OS Throttling			102		Additional 50% throttling
		OS Shutdown			104		
		Dos Throttling			90/85		Addtional 50% throttling
		Shutdown			105		

(2) 저소음 모드(Low)

CPU SPEED		Address (Hexa)	RPM	Noise	(for CPU temperature) CPU_Sensor(on/off)	(for GPU temperature) GPU_Sensor(on/off)	Speed step & throttling
2 단계	OFF	FF	-		-	-	Speed step Low
	Low	60	2560		55/30		
	Middle1	57	2825		65/55		
	Middle 2	4D	3192		70/65		
	Middle 3	40	3840		75/70		
	Middle 4	38	4389		80/75		
	High	33	4819		85/80		
		OS Throttling			102		Additional 50% throttling
		OS Shutdown			104		
		Dos Throttling			90/85		Addtional 50% throttling
		Shutdown			105		

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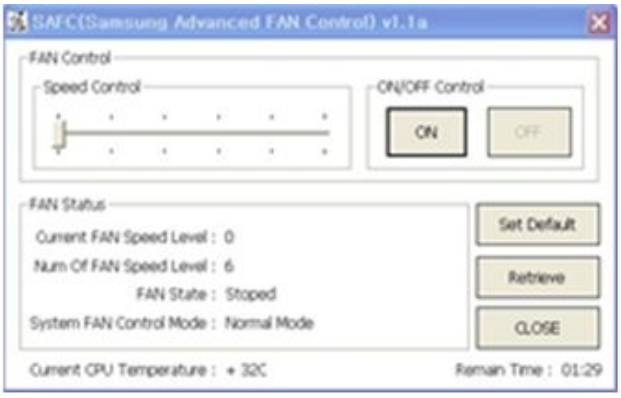
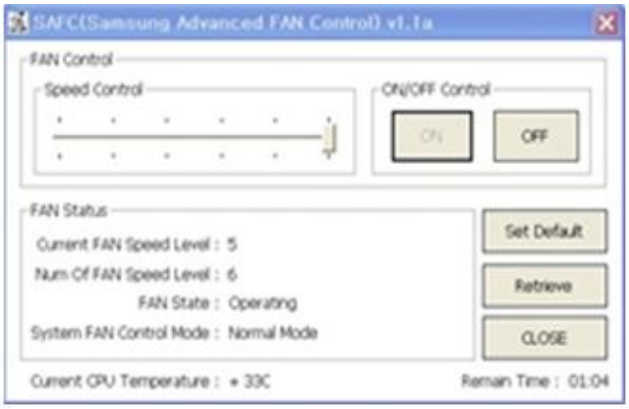
CPU Fan Control

- One can turn the fan on & off and check the fan's operational conditions without system disassembly



Pic (1) Fan off status



Pic (2) Fan on status

- SAFC's default setting is "Fan off" or "Minimum Fan Speed".
- Press "ON" in "ON/OFF Control" Fan is turned on to maximum fan speed.
- Press "OFF" in "ON/OFF Control" Fan returns to default setting.

>Fan Voltage Measurement

- Read Fan RPM indicated in SAFC.

>Fan Voltage Pass/Fail determination

- If Fan RPM satisfies "rpm spec +/-10%", then Fan test is "PASS" .

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4.9. System Diagnosis

System Diagnostics Card

The Diagnostics Card shows the system operations during the POST (Power On Self Test) in a 2 digit hexadecimal number by connecting the cable to the 10 pin connector below the PCMCIA slot after separating the Top part. The card is used to evaluate the reason for the malfunction without disassembling the system when the system malfunctions and to test if the system operates normally after replacing a defective FRU.

Debugging Code

In general, if a defect of the circuit or part is detected during the system test, the system stops at a particular code. The error codes for each part of the system are listed in the following table

※ Please Refer to the Training manual chapter4. Trouble Shooting.

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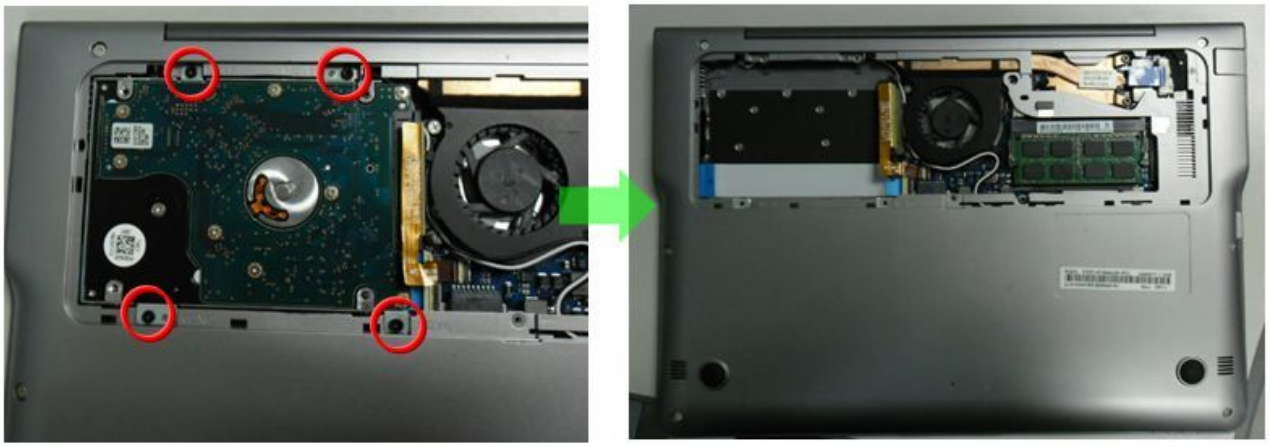
4.10. Hardware Upgrade

HDD Upgrade



Four screws (red circle) after removing ,Disconnect the cable from the connector FPC.

mini SSD card Upgrade (mSATA SSD)

- At first disassemble screw (red circle) change mini SSD card module.

HDD(SATA2)		
BA59-03210A	HTS545050A7E380	500GB (5.4KR SATA) , 7mmH
mSATA SSD(SATA3)		
BA59-03232C	SDSA5DK-128G-1004	128GB(SATA)

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Memory Upgrade

One or more memory modules are installed on the computer.

Users can replace the memory modules or add new memory modules using 1 of the slots.

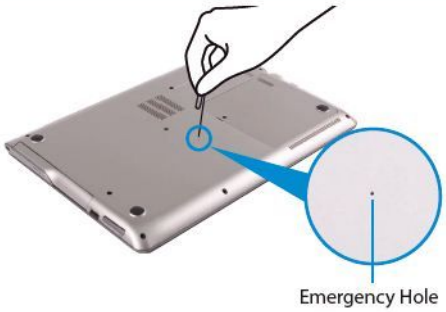
- Replace or install a new memory module only after shutting the computer down completely and separating the AC adapter from the computer.
- It is recommended that you add a memory module with the same specification (the same manufacturer and the same capacity).
- The images used for the illustration are of a representative model, therefore the images may differ from the the actual product.

Adding or Replacing Memory Modules

1 Disconnect the AC power adapter after turning off the computer.

2 Insert an object, such as a paper clip, into the **Emergency Hole** at the bottom of the computer to cut the battery power. If the Power button does not work anymore, that means you successfully shut the power off.

If you proceed without pressing the Emergency Hole, the main board and the memory module may be damaged.



The location of the Emergency Battery Hole may differ depending on the model.

3 Remove the screw on the memory compartment cover at the bottom of the computer using a screw driver.

► **For 13.3 inch models**

4 Insert a new memory module into the memory slot at an angle of approximately 30 degrees aligning it to the angle of the memory slot.

► **For 13.3 inch models**

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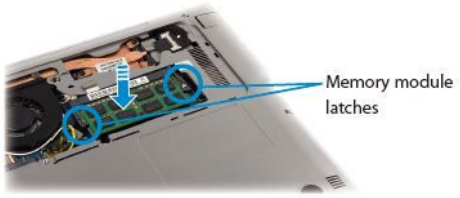
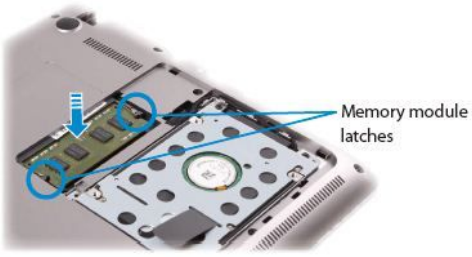
5 Push the memory module down so that it is completely fixed. If the memory does not fit easily, push the memory module down while pulling the **memory module latches** outward.

► **For 13.3 inch models**



► **For 14 inch models**



6 Close the memory compartment cover and fasten the screw.

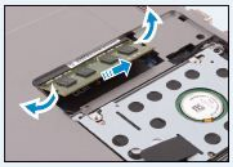
7 Connect the AC adapter and press the power button to turn the computer on.

If you do not connect the AC adapter, the computer will not be turned on even if you press the power button.

Removing a memory module

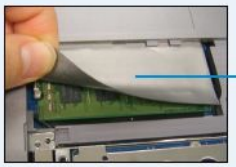
Pull the memory module latches outward.
The memory module will pop up.

Remove the memory module out at an angle of 30 degrees.

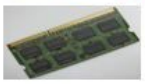


For some models, a special film is attached onto the memory module to enhance the wireless LAN performance.

When you replace the memory module, make sure that you do not remove the film.



MEMORY * 8GB Later introduction schedule



1105-002376	DDR3 1600MHz 28nm,4GByte	M471B5273EB0-CK0
1105-002328	DDR3 2G 1600MHz,2GByte	M471B5773DH0-CK0

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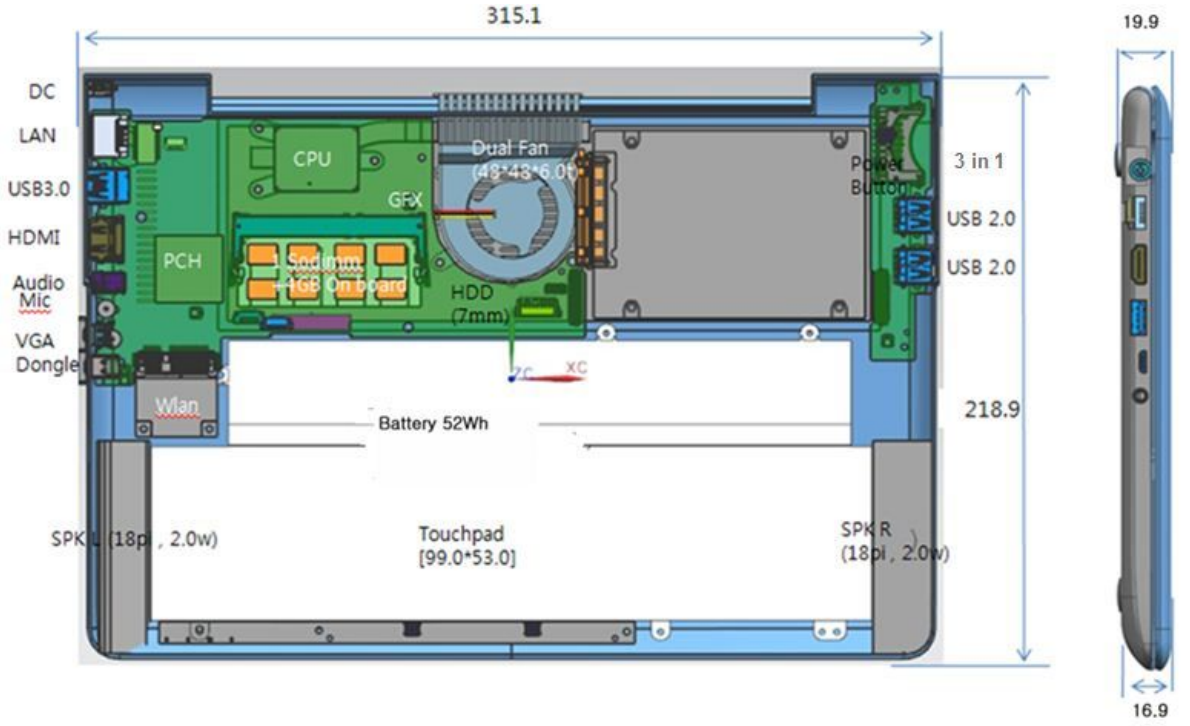
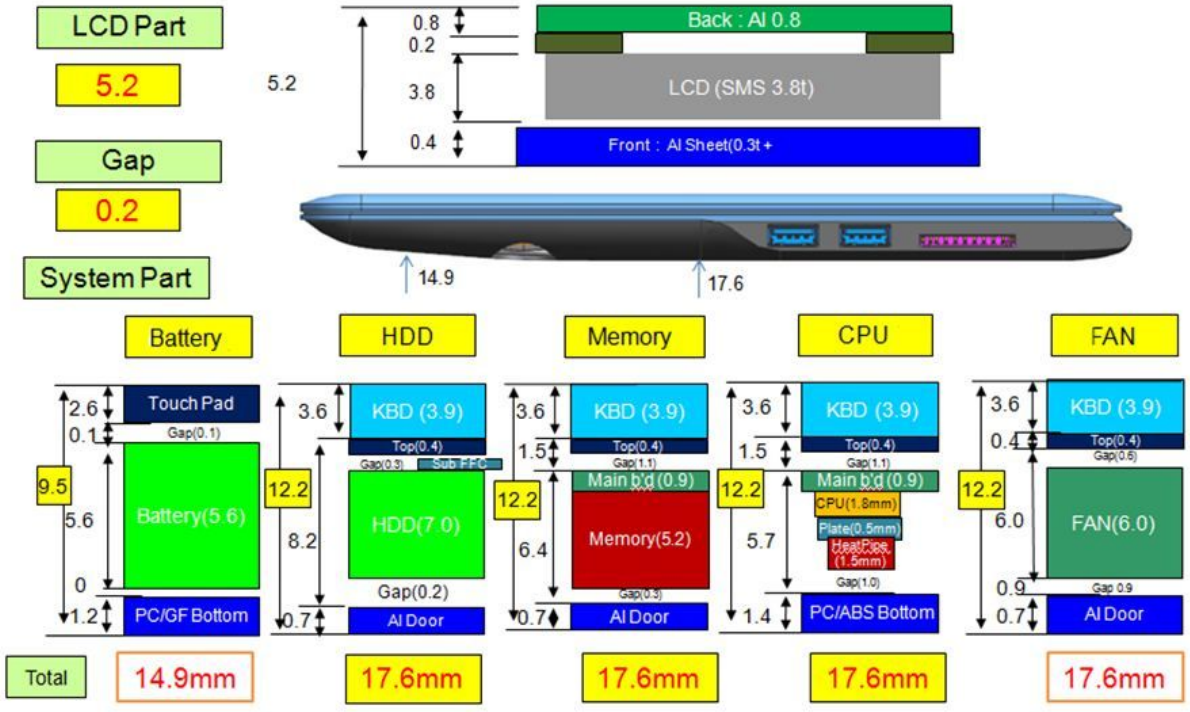
5. System Wire Diagram

5.1. System Layout

System Layout



Height Simulation



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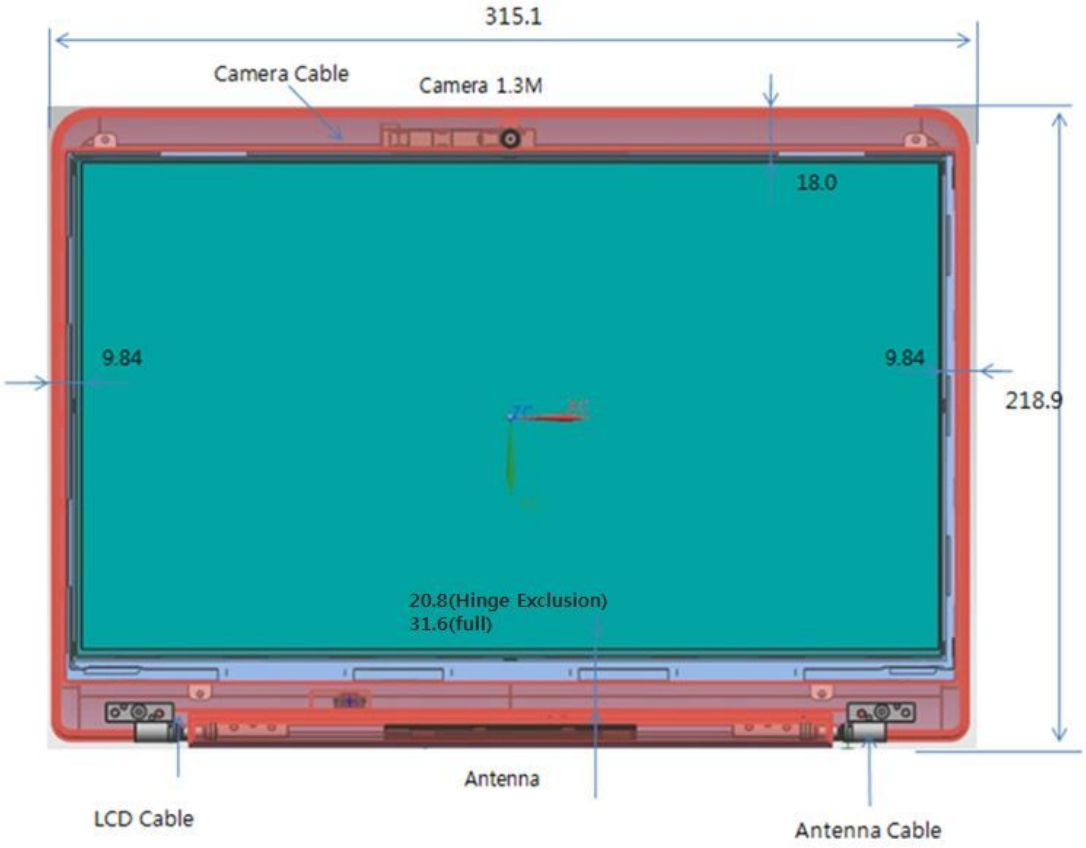
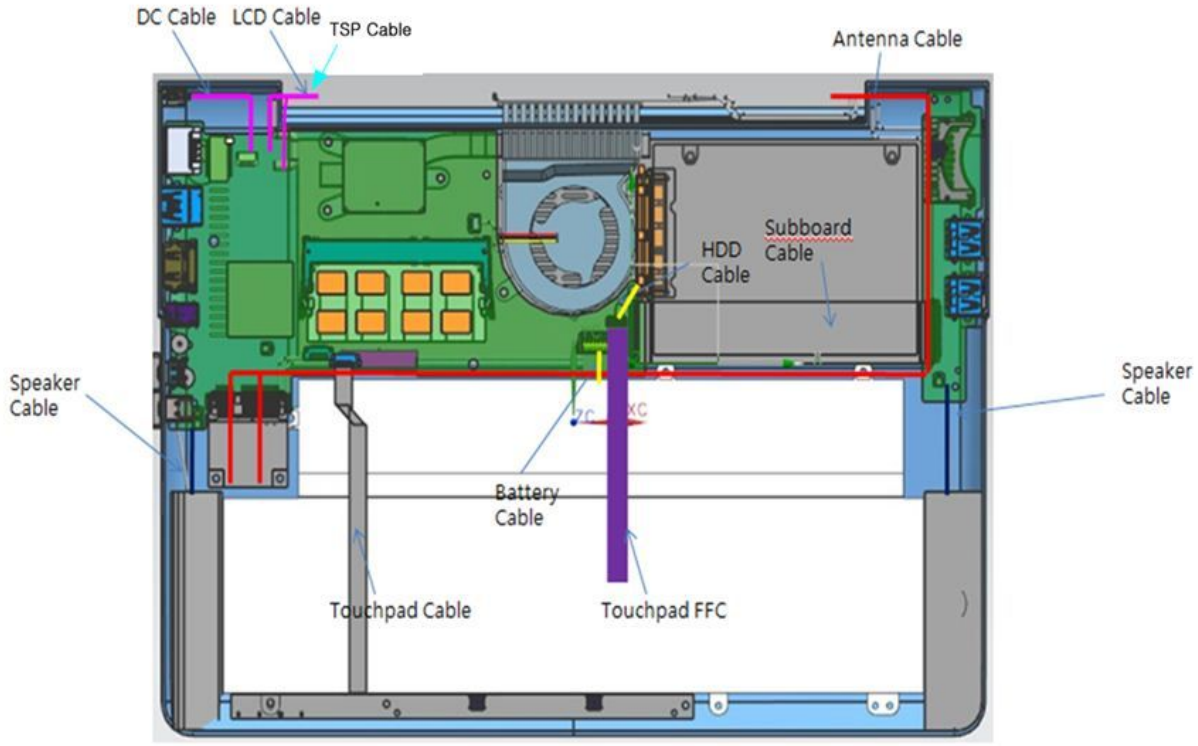
LCD Layout



Cabling



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Keyboard

○ : KBD Water Check sheet Location

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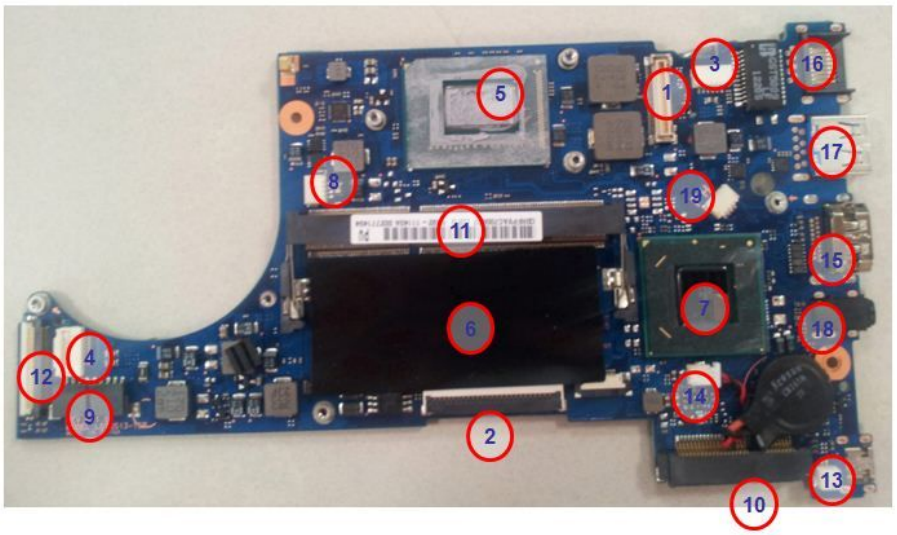
5.2. Board Component

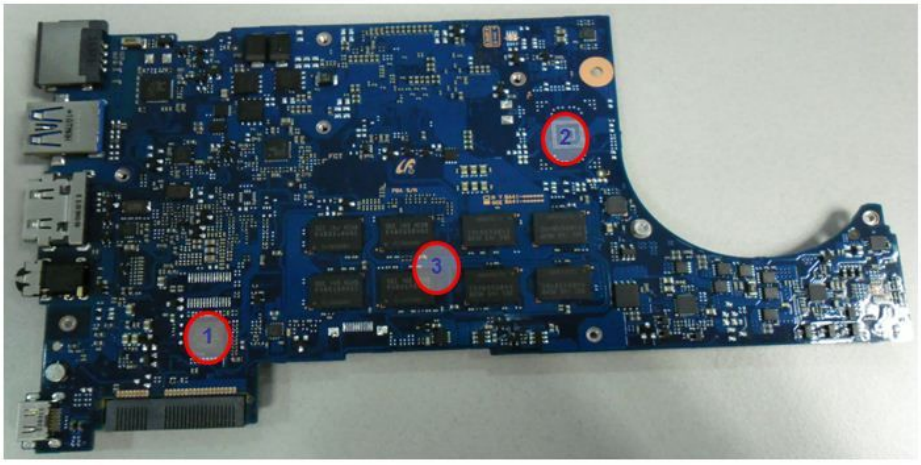
MainBoard

Front



1. LCD Connector
2. KBD Connector
3. DC-in Connector
4. HDD Connector
5. CPU
6. Onboard Memory
7. PCH
8. FAN Connector
9. Battery Connector
10. WLAN Connector
11. SODIMM
12. USB SubB'd Connector
13. Speaker Connector
14. RTC Battery Connector
15. HDMI Connector
16. LAN Connector
17. USB3.0 Connector
18. VGA Dongle Connector
19. TSP Cable connector

Back



1. MICOM
2. Express Cache(iSSD)
3. Onboard Memory

SSD Applicable specifications is Unapplied iSSD

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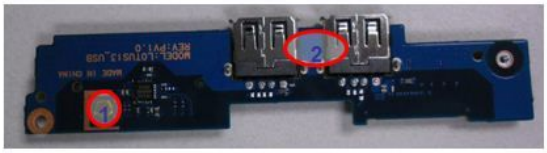
Subboard

3.3 TP SubBoard

1. Main to TP sub connector
2. Touchpad FFC Connector

3.4 USB SubBoard



1. PW S/W PW S/W button
2. USB 2.0

1. 3-in-1 connector
2. USB 2.0
3. Main to sub connector

3.5 camera SubBoard

1. Camera connector
2. Main to sub connector

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GSPN (GLOBAL SERVICE PARTNER NETWORK)

Area	Web Site
Europe, MENA, CIS, Africa	https://gspn1.samsungcsportal.com
E.Asia, W.Asia, China, Japan	https://gspn2.samsungcsportal.com
N.America, S.America	https://gspn3.samsungcsportal.com

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